



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
WASHINGTON, DC 20555 - 0001**

January 6, 2012

MEMORANDUM TO: ACRS Members

FROM: Christopher L. Brown, Senior Staff Engineer /RA/  
Technical Support Branch  
Advisory Committee on Reactor Safeguards

SUBJECT: CERTIFICATION OF THE MINUTES OF THE MEETING OF THE  
SUBCOMMITTEE OF ESBWR FERMI UNIT 3 SER CHAPTERS  
ON NOVEMBER 30, 2011, IN ROCKVILLE, MARYLAND

The minutes for the subject meeting were certified on December 20, 2011. Along with the transcripts and presentation materials, this is the official record of the proceedings of that meeting. A copy of the certified minutes is attached.

Attachment: As stated

cc w/o Attachment: E. Hackett  
C. Santos

cc w/ Attachment: ACRS Members



Certifies By: Michael Corradini  
Certified on December 20, 2011

**ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
MINUTES OF THE MEETING OF THE SUBCOMMITTEE ESBWR  
FERMI R-COLA CHAPTERS  
ON NOVEMBER 30, 2011, IN ROCKVILLE, MD**

**INTRODUCTION**

On November 30, 2011, the ACRS Subcommittee on ESBWR held a meeting in Room T-2B1, 11545 Rockville Pike, Rockville, Maryland. The purpose of the meeting was for the staff and Detroit Edison (DTE) to brief the Subcommittee on SER Chapter 9 (Auxiliary System), Chapter 11 (Radioactive Waste Management), Chapter 12 (Radiation Protection), and Chapter 13 (Conduct of Operation) for the Fermi R-COLA. Mr. Christopher Brown was the designated federal official for this meeting. The subcommittee received no request from the public to make oral statements. The entire meeting was open to the public. The subcommittee chairman convened the meeting at 8:30 am and adjourned at 1:30pm.

**ATTENDEES:**

ACRS Members/Consultants

M. Corradini, Subcommittee Chairman  
J. Stetkar, Member-at-Large  
S. Abdel-Khalik, Member  
J. S. Armijo, Member  
M. Ryan, Member  
T. Kress, Consultant  
G. Wallis, Consultant

ACRS Staff

C. L. Brown, Designated Federal Official

NRC Staff

Raj Anand  
Dan Barss  
Bethany Cecere  
Wayne Chalk  
George Cicotte  
Gordon Curran  
Eugene Eagle  
Michael Eudy  
Jerry Hale  
Charles Hinson  
Ronaldo Jenkins  
Andrea Jones  
Chang-Yang Li

Mark Lintz  
 Greg Makar  
 Eileen McKenna  
 Perry Pederson  
 Richard Pelton  
 Ed Robinson  
 Veronica Rodriguez  
 Eduardo Sastre  
 Eric Schrader  
 Angelo Stubbs  
 Mark Tonacci  
 Robert Vettori  
 Mike Wasem  
 Larry Wheeler

Detroit Edison Staff

M. Brandon  
 P. Smith  
 N. Latzy  
 R. Pratt

Others

P. Campbell, GEH  
 A. Liebergen, Black & Veatch  
 E. Meyer III, Black & Veatch

**SUMMARY OF THE MEETING**

Major Issues discussed during the meeting are described in the following Table.  
 Table 1. Major Issues Discussed During the Meeting

| Major Issues Discussed  |                               |
|---|-------------------------------|
| Issue   | Reference Pages in Transcript |
| Member Ryan asked about additional shielding and placement of water containers since DTE's FSAR takes a departure which describes the impacts to the Radwaste Building, including waste storage provisions, waste storage component capacities, waste volumes, evaluation for shielding, impacts to occupational exposure, radiation zones and access routes. | 12-15                         |
| Members Armijo asked about the airborne effluents and annual offsite doses as it related to DTE's discussion limits on the iodine limits for the reactor water to ensure that the Appendix I doses were not exceeded.   | 24-25, 27-29, 31-33           |
|   | 21-24, 45-48, 71              |



|  |              |
|--|--------------|
| Discussion on how the applicant derived best-estimate values for TEDE.   | 35-30, 47-49 |
| Member Armijo asked questions concerning DTE's noble water chemistry program. In particular, concerning the reduction of N16 inventory.  | 44-51        |
| Discussion of emergency management and agencies.   | 67-69        |
| Member Stetkar asked about the D-RAP and the maintenance rule as it relates to equipment important to safety.  | 96-108       |
| Member Stetkar as about loss of offsite power frequencies; in particular, the basis for the loss of offsite power frequency that was used in the PRA evaluation.   | 108-115      |
| Member Armijo asked about seismically-induced flooding equivalent to a Tsunami from Lake Erie on Fermi Unit 3 site.  | 115-116      |
| Member Stetkar asked about the PRA analysis on the auxiliary heat sink.  | 119-123      |
| Member Stetkar asked about the PRA analysis that takes full credit for the systems out in the turbine building for accident mitigation, namely the condensate systems and the main feed water system that's cooled by turbine component cooling water. In particular, how long can the inventory of water in unit 3 basin remove heat from the reactor component cooling water system? | 124-126      |
| Member Stetkar asked about freeze protection for the condensate storage system.  | 128-130      |
| Applicant responded to questions (leaks, guidelines, etc) about DTE's hydrogen water chemistry system for unit 3.  | 132-135      |
| Discussion of the use of fiberglass reinforced polyester piping for plant service water system .   | 144-145      |
| Chairman Corradini asked about to calculations (preferred power and one with loss of preferred power).   | 161-163      |

Table 2. Action Items

| Action Item | Reference Pages in Transcript |
|-------------|-------------------------------|
| None        |                               |

**BACKGROUND MATERIALS PROVIDED TO THE SUBCOMMITTEE**

1. Memorandum from David Matthews, Director, Director of New Reactor Licensing, Office of New Reactors to Edwin M. Hackett, Executive Director, ACRS; Subject: "Fermi 3 Combined License Application – Advanced Final Safety Evaluation for Chapter 9, 11, 12, and 13.

\*\*\*\*\*

**NOTE:**

Additional details of this meeting can be obtained from a transcript of this meeting

available in the NRC Public Document Room, One White Flint North, 11555 Rockville Pike, Rockville, MD, (301) 415-7000, downloading or view on the Internet at <http://www.nrc.gov/reading-rm/doc-collections/acrs/> or it can be purchased from Neal R. Gross and Co., 1323 Rhode Island Avenue, NW, Washington, D.C. 20005, (202) 234-4433 (voice), (202) 387-7330 (fax), [nrgross@nealgross.com](mailto:nrgross@nealgross.com) (e-mail).

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**Official Transcript of Proceedings**  
**NUCLEAR REGULATORY COMMISSION**

Title:                   Advisory Committee on Reactor Safeguards  
                              ESBWR for Fermi Unit 3 R-COLA

Docket Number:       (n/a)

Location:               Rockville, Maryland

Date:                    Wednesday, November 30, 2011

Work Order No.:       NRC-1294

Pages 1-165

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

(ACRS)

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SUBCOMMITTEE ON ESBWR FOR FERMI UNIT 3 R-COLA

+ + + + +

WEDNESDAY

NOVEMBER 30, 2011

+ + + + +

ROCKVILLE, MARYLAND

+ + + + +

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

MEMBERS PRESENT:

MICHAEL L. CORRADINI, Chairman

JOHN W. STETKAR, Member-at-Large

SAID ABDEL-KHALIK, Member

J. SAM ARMIJO, Member

MICHAEL T. RYAN, Member

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1 ACRS CONSULTANTS PRESENT:

2 THOMAS S. KRESS

3

4 NRC STAFF PRESENT:

5 CHRISTOPHER BROWN, Designated Federal Official

6 RAJ ANAND, NRO/DNRL/BWR

7 DAN BARSS, NSIR/DPR/NRLB

8 BETHANY CECERE, NSIR/DPR/EP/IRIB

9 WAYNE CHALK, NSIR

10 GEORGE CICOTTE, NRO/DCIP/CHPB

11 GORDON CURRAN, NRO/DSRA/SBPB

12 EUGENE O. EAGLE, JR., NRO/DE/ICE2

13 MICHAEL EUDY, NRO/DNRL/BWR

14 JERRY HALE, NRO/DNRL

15 CHARLES HINSON, NRO/DCIP/CHPB

16 RONALDO JENKINS, NRO

17 ANDREA JONES, NSIR/DPR

18 CHANG-YANG LI, NRO/DSRA/SBPB

19 MARK LINTZ, NRO/DCIP/COLP

20 GREG MAKAR, NRO/DE/CIB1

21 EILEEN McKENNA, NRO/DNRL

22 PERRY PEDERSON, NSIR/DSP/CSIRB

23 RICHARD PELTON, NRO/DCIP/COLP

24 ED ROBINSON, NSIR/DPR

25 VERONICA RODRIGUEZ, NRO/DCIP/COLP

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1 EDUARDO SASTRE, NRO/DE/CIB

2 ERIC SCHRADER, NRO

3 ANGELO STUBBS, NRO/DSRA/SBPA

4 MARK TONACCI, NRO/DNRL/BWR

5 ROBERT VETTORI, NRO/DSRA/BPFP

6 MIKE WASEM, NSIR/DPR/EP/NRLB

7 LARRY WHEELER, NRO/DSRA/SBP

8

9 ALSO PRESENT:

10 MICHAEL R. BRANDON, DTE Energy/Detroit Edison

11 PATRICIA CAMPBELL, GE-Hitachi

12 DAVE HARWOOD, DTE Energy

13 DAVID HINDS, GE-Hitachi

14 ROY KARIMI, ERI

15 NICHOLAS LATZY, DTE Energy

16 ADAM LIEBERGEN, Black & Veatch

17 RON MAY, DTE Energy

18 ED MYER, Black & Veatch

19 RYAN PRATT, DTE Energy

20 STEVEN RUS, Black & Veatch

21 WALTER SCHUMITSCH, GE-Hitachi

22 PETER W. SMITH, DTE Energy

23 STEVE THOMAS, Black & Veatch

24 KEVIN WEINISCH, KLD

25 WILLIAM R. ZIEGLER, Numerical Applications Inc.

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|    |   |     |
|----|---|-----|
| 1  | T-A-B-L-E O-F C-O-N-T-E-N-T-S                 |     |
| 2  | Opening Remarks and Objectives                |     |
| 3  | by Dr. Michael L. Corradini, ACRS             | 7   |
| 4  | Staff opening remarks by Jerry Hale, NRO      | 8   |
| 5  | CHAPTER 11                                    |     |
| 6  | Detroit Edison Company by Peter Smith         | 9   |
| 7  | NRO by Raj Anand                              | 16  |
| 8  | CHAPTER 12                                    |     |
| 9  | Detroit Edison Company by Peter Smith         | 22  |
| 10 | NRO by Raj Anand                              | 39  |
| 11 | CHAPTER 13                                    |     |
| 12 | Detroit Edison Company by Peter Smith         | 53  |
| 13 | NRO by Jerry Hale                             | 72  |
| 14 | FOLLOW-UP ON ISSUES FROM OCTOBER ACRS MEETING |     |
| 15 | Detroit Edison Company by Peter Smith         | 91  |
| 16 | CHAPTER 9                                     |     |
| 17 | Detroit Edison Company by Peter Smith         | 117 |
| 18 | NRO by Jerry Hale                             | 148 |
| 19 |   |     |
| 20 |   |     |
| 21 |   |     |
| 22 |   |     |
| 23 |   |     |
| 24 |   |     |
| 25 |   |     |

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

8:29 a.m.

CHAIR CORRADINI: The meeting will come to order.

So this is a meeting of the Advisory Committee on Reactor Safeguards, the Subcommittee on the ESBWR for the Fermi Unit 3 R-COLA.

I am Mike Corradini. I am Chairman of the Subcommittee. The Subcommittee members currently in attendance are Dr. Said Abel-Khalik, Dr. Sam Armijo, Dr. Mike Ryan, and later, Dr. Shack and Stetkar will join us for a particular chapter, and Dr. Tom Kress, consultant to the Committee.

The purpose of this meeting is to discuss SERs for Chapter 11 which is Radioactive Waste Management, Chapter 12 which is Radiation Protection. Chapter 13, Conduct of Operations, and Chapter 9, Auxiliary Systems, associated with the Fermi 3 R-COLA.

Also, several issues and questions that were raised by the Subcommittee during the October meeting will be answered by the staff and the Applicant towards the end of the meeting.

The Subcommittee will hear presentations by and hold discussions which representatives of the NRC staff and the Applicant, Detroit Edison Company,

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1 or DTE, regarding these matters.

2 The Subcommittee will gather information,  
3 analyze relevant issues and facts and formulate  
4 proposed positions and actions as appropriate for  
5 deliberation by the full Committee.

6 Chris Brown is our Designated Federal  
7 Official for this meeting.

8 The rules for participation in today's  
9 meeting have been announced as part of the notice of  
10 this meeting previously published in the Federal  
11 Register on November 7, 2011. A transcript of the  
12 meeting is being kept and will be made available as  
13 stated in the Federal Register notice.

14 It is requested that the speakers first  
15 identify themselves and speak with sufficient clarity  
16 and volume so they can be readily heard. Also, please  
17 silence all iPhones and personal devices.

18 We have not received any requests from  
19 members of the public to make oral statements or  
20 written comments at this time. There is a bridge line  
21 setup for Detroit Edison to call in if DTE folks here  
22 or their associated engineers need help.

23 I would encourage that all those on the  
24 line please put the bridge line, please put their  
25 phones on mute so we don't get clicking and feedback

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1 effects.

2 The only other general statements I want  
3 to make is that this is the third of our Subcommittee  
4 meetings, which will probably four or five of them.  
5 We have started with issues that are really  
6 incorporated by reference with no exceptions or  
7 deviations. And we're going to proceed through as we  
8 go to chapters where there'll be additional  
9 discussions.

10 Other than that, we'll proceed with the  
11 meeting, and I'll call on Mark Tonacci to lead us off  
12 and do all the introductions of the various people.

13 MR. TONACCI: Good morning, and thank you.  
14 Thank you Committee and Committee members. I  
15 appreciate your time and attention here.

16 I just wanted to start with a couple new  
17 faces that are up here and a face that's leaving. NRO  
18 is going through a bit of a reorganization. Today is  
19 my last day as the Branch Chief of the BWR Branch  
20 which oversees ESBWR Design Certification, as well as  
21 the Fermi COL.

22 I will be leaving and taking over the  
23 AP1000 branch. That's going to be one branch instead  
24 of two as it has been in the past, since the design  
25 cert work on AP1000 is rather complete.

1           In my place for the BWR Branch, Ronaldo  
2           Jenkins will be taking over sitting to my left, and  
3           Ronaldo will be sitting at the table this morning for  
4           the most of the day as we've done much of the  
5           turnover.

6           The other face that you've seen before but  
7           not quite in this capacity. Jerry Hale is here.  
8           Adrian Muniz, the Lead Project Manager, is on leave  
9           for a period of time. And Jerry Hale has been and  
10          will continue to be acting as the Lead Project Manager  
11          for the Fermi application. And so with that, I'll  
12          turn over to Ronaldo.

13          MR. JENKINS: Good morning. Thank you and  
14          the Committee for meeting today. I'd like to turn it  
15          over to Jerry Hale to get into the meeting.

16          MR. HALE: Thank you.

17          MR. RYAN: Jerry?

18          MR. HALE: I'd like to thank everyone for  
19          being here today, especially the ACRS members. We're  
20          here to present four chapters today. Chapter 11, 12,  
21          13 and 9. I'd also like to extend my personal thanks  
22          to all the members of the Fermi team who have gotten  
23          us here today, Lon Farborg, and we're bringing it all  
24          together here for this presentation.

25          CHAIR CORRADINI: Good. And we'll be

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1 kicked off by Peter?

2 MR. SMITH: Yes.

3 CHAIR CORRADINI: Okay.

4 MR. SMITH: I'm Peter Smith from Detroit  
5 Edison, and before we start with Chapter 11, I just  
6 want to introduce a few people who are different from  
7 previous meetings. Today, I have Ron May with us, our  
8 Senior Vice President, and Dave Harwood, Director of  
9 Nuclear Development, Steve Rus is the Senior Vice  
10 President with Black & Veatch, who has been our COLA  
11 contractor from the beginning of this project.

12 And then on the GE side, I want to  
13 introduce David Hinds who's a new face from GE for us,  
14 but probably not a new face to some of you. And Kevin  
15 Weinisch from KLD who did our evacuation time estimate  
16 and Bill Ziegler from Numerical Applications, Inc.,  
17 who did much of the dose calculations work in  
18 meteorology.

19 And with that, I'm going to turn over the  
20 Chapter 11 presentation to Nick Latzy of my staff.  
21 And, Nick?

22 MR. LATZY: Thank you, Peter. As Peter  
23 said, my name is Nick Latzy. I'm the engineering  
24 supervisor for the Fermi 3 Project, and I will be  
25 presenting Chapter 11, Radioactive Waste Management.

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1           This first slide gives a sectional  
2 breakdown of the chapter. The sections I'll be  
3 presenting are sections 11.2, 11.3, 11.4 and 11.5.

4           Section 11.2 is the Liquid Waste  
5 Management System. In this section we provide site  
6 specific supplemental information which describes the  
7 cost benefit analysis for the Liquid Waste Management  
8 System. This analysis is based on the population dose  
9 estimates due to a liquid effluents described in  
10 Chapter 12.

11           The population dose in Chapter 12 assumes  
12 liquid effluents during normal operation even though  
13 the ESBWR is designed as a zero liquid effluent  
14 discharge plant. The cost parameters used to  
15 calculate the total annual costs for each applicable  
16 augment listed in Reg. Guide 1.110, are taken without  
17 exception from the Reg. Guide, Appendix A.

18           The analysis conservatively assumes that  
19 each potential augment is 100 percent effective in  
20 reducing the effluent dose to zero. And the analysis  
21 identified no additional cost beneficial augments.

22           In addition, section 11.2 provides  
23 standard information for the following COL items. The  
24 first standard COL item describes system design and  
25 sampling procedures to preclude non radioactive

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1 systems from becoming contaminated. These system  
2 design and sampling procedures are used to implement  
3 the Guidance and Inspection and Enforcement Bulletin  
4 80-10.

5 The second standard COL item references  
6 the ESBWR design and procedures that minimize  
7 contamination of facilities and the environment in  
8 compliance with 10 CFR 20.1406.

9 The last item is a site specific  
10 supplemental item, and that item describes a design  
11 provisions for the Circulating Water Blowdown line to  
12 preclude any unmonitored release of radioactivity to  
13 groundwater.

14 In Section 11.3, the Gaseous Waste  
15 Management System. FSAR Section 11.3 provides site-  
16 specific information describing the cost benefit  
17 analysis for the Gaseous Waste Management System. The  
18 analysis is based on the population dose estimates due  
19 to gaseous effluents described in FSAR Chapter 12.  
20 The cost parameters from Regulatory Guide 1.110,  
21 Appendix A, were used as the basis for cost benefit  
22 evaluation without exception.

23 And, lastly, this analysis identified no  
24 additional cost beneficial augments.

25 Next slide please.

1 In Section 11.4, the Solid Waste  
2 Management System, provides information with regard to  
3 the Radwaste Building reconfiguration to increase  
4 storage capacity for Class B and C waste. This  
5 reconfiguration of the Radwaste Building as a  
6 departure from standard design in the DCD.

7 The standard design is six months of  
8 storage capacity. This reconfiguration gives Fermi 3  
9 enough space to accommodate a minimum of ten years of  
10 Class B and C waste while maintaining enough space for  
11 at least three months of packaged Class A waste.

12 Departure affect. This departure affects  
13 structures system and component descriptions in FSAR  
14 Chapters 1, 9A, 11 and 12. The departure describes  
15 impacts to the Radwaste Building, which include waste  
16 storage provisions, waste storage component  
17 capacities, waste volumes, evaluation for shielding,  
18 impacts to occupational exposure, radiation zones and  
19 access routes.

20 MR. RYAN: Did you have to do any  
21 additional shielding? Plan for any additional  
22 shielding?

23 MR. BRANDON: Yes, this is Mike Brandon.

24 MR. RYAN: He has to come to a mic and  
25 identify yourself. I'm sorry.

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1 MR. BRANDON: Yes, this is Mike Brandon,  
2 Licensing Manager for the Fermi 3 Project. There were  
3 some wall thicknesses that were revised, adjusted to  
4 accommodate the reconfiguration and the room sizes.  
5 Those wall sizes were adjusted such that the radiation  
6 zones were the same for the reconfigured Radwaste  
7 Building versus those that were described in the DCD.

8 MR. RYAN: Okay. Are you planning  
9 anything like self shielding with other ways to, you  
10 know, kind of arranging it so you can reduce scattered  
11 radiation or things like that, or just relying on the  
12 shield building itself?

13 MR. SCHUMITSCH: This Skip Schumitsch at  
14 GE-Hitachi. Again, the actual skids that, vendor  
15 skids that actually do the processing are self  
16 shielded. Now, they actually come in with all the  
17 shielding on them.

18 MR. RYAN: I see. But your waste  
19 containers at the end are going to be in storage for  
20 some time.

21 MR. SCHUMITSCH: Yes. Yes.

22 MR. RYAN: So some of those will likely be  
23 more radioactive than others. What happens if high  
24 radioactive content and ends up on the other wall, the  
25 other shield wall?

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1 Am I being clear on that. I'm not sure if  
2 I am.

3 MR. SCHUMITSCH: Storing the waste meet  
4 the requirements for that level of waste. So some of  
5 them are actually some type of hits that then it would  
6 be storing the waste for the long term. Is that, have  
7 I answered your question or?

8 MR. SMITH: Well, I think from the  
9 standpoint of design you are. But I think, you're I  
10 think referring to operationally how I would manage  
11 this.

12 MR. RYAN: My experience is typically  
13 higher activity waste containers are placed in the  
14 center of a room with other waste between those hot  
15 wastes in the walls. So that you can do operational  
16 control to help you, you know, not challenge your dose  
17 limits at whatever boundary you've set. Is that  
18 correct?

19 MR. SMITH: And we have an ALARA program  
20 that will match.

21 MR. RYAN: Okay. But that is --

22 MR. SMITH: That is the standards. And  
23 that's what we do at current storage facility at Fermi  
24 2, so I wouldn't expect it to be managed in a  
25 different fashion.

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1 MR. RYAN: That same practice is something  
2 you're going to move over to the new unit. Thanks.

3 MR. LATZY: Thank you. Next slide please.

4 Additionally, section 11.4 provides  
5 standard supplemental information stating that the  
6 solid waste cost benefit analysis is addressed by the  
7 liquid effluent and gaseous effluent cost benefit  
8 analyses.

9 The first standard COL item addresses the  
10 specific testing and implementation of programs to  
11 comply with regulatory guidance which are Reg. Guide  
12 1.143 and Reg. Guide 8.8.

13 The second standard COL item provides a  
14 standard COL response information describing design  
15 and procedures that address IEB 80-10, the prevention  
16 of cross contamination of non radioactive systems.

17 The last standard COL item on this slide  
18 provides information with regards to the incorporation  
19 by reference of NEI 07-10A, the Generic FSAR Template  
20 Guidance for Process Control Program. The milestone  
21 for development and implementation of the Process  
22 Control Program is addressed in FSAR Section 13.4.

23 Next slide please.

24 Lastly, the last section of Chapter 11 is  
25 11.5, Process Radiation Monitoring System, which

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1 provides a description of the Offsite Dose Calculation  
2 Manual, NEI 07-09A, generic FSAR Template Guidance  
3 for Offsite Dose Calculation Manual Program  
4 Description, is incorporated by reference.

5 The ODCM includes the following  
6 information. The methodology and parameters used for  
7 calculation of offsite dose and monitoring. The  
8 program for process and effluent monitoring and  
9 sampling describes the methodology for deriving the  
10 lower limit detection for each effluent monitor. And  
11 provisions for sampling liquid and gaseous waste  
12 streams and batch liquid releases, including  
13 frequencies.

14 This concludes my presentation of Chapter  
15 11. Are there any questions?

16 CHAIR CORRADINI: That's all right,  
17 subcommittee? Sounds fine.

18 MR. LATZY: Thank you very much.

19 CHAIR CORRADINI: Thank you. So the staff  
20 will come up now and discuss Chapter 11.

21 MR. ANAND: Good morning. My name is Raj  
22 Anand. I am one of the project managers working on  
23 the Fermi 3 COL application. I thank Detroit Edison  
24 for making their presentation on Chapter 11,  
25 Radioactive Waste Management.

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1 I agree with the Detroit Edison  
2 presentation. The technical reviewer for Chapter 11  
3 is George Cicotte, and now I will request George to  
4 present the highlight of Chapter 11 SER. George?

5 MR. CICOTTE: Could you go to the next  
6 slide please? I guess the next one.

7 First of all, as was noted by the  
8 applicant, 11.1 was incorporated by reference and  
9 there was not site specific information in that  
10 section so, you know, our review is limited to  
11 verifying that they did incorporate by reference.

12 In addition to the relevant sections of  
13 the DCD incorporated by reference, Sections 11.2  
14 through 11.5 all had some site specific information,  
15 supplemental information. And we'll address those the  
16 parts that involve the most significant portions of  
17 the review. Next slide please.

18 The evaluation was performed using the  
19 guidance and consistent with the regulations and  
20 information you see on the slide. Including standard  
21 review plan and associated branch technical positions  
22 for certain aspects of it. Topics in Reg. Guide 1.206  
23 and to reflect evaluation of the site specific  
24 features and parameters that were not part of the  
25 incorporated DCD. Next slide.

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1           The more significant portions of the  
2 review involved how the applicant proposes to  
3 implement the provisions of both in 80-10,  
4 Contamination Minimization Groundwater Protection  
5 aspects under 20.1406.

6           The cost benefit analyses for the liquid  
7 gaseous and solid Radwaste processing systems.  
8 Maintaining exposures, as well as reasonably  
9 achievable, and long term temporary storage of  
10 radioactive waste in the event that a suitable  
11 disposal site's not available. Next.

12           I think in summarizing that their VIOT  
13 included the operational programs and radioactive  
14 protection that involves system operation and  
15 functions such as the site specific calculations of  
16 dose to the public.

17           And that will be discussed further in  
18 Chapter 12. Certain specific measures involve the  
19 Process Control Program and the Offsite Dose  
20 Calculation Manual and instrument capabilities and  
21 sensitivities that the applicant already discussed.  
22 Next slide.

23           In the areas of our review that we looked  
24 at complies with 20.1406 and, again, that's further  
25 discussed in Chapter 12. The application's

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1 information on cost benefit analysis for the liquid  
2 waste system showed that the dose reduction from the  
3 least cost augment was not cost beneficial because it  
4 didn't meet the threshold. Next slide.

5 On the departure, to achieve additional  
6 long term waste storage capacity, in particular for  
7 Class B and C waste, they reconfigured the positions  
8 of the Radwaste components and recalculated doses and  
9 the effect internal to the Radwaste Building.

10 The capacities and efficiencies systems,  
11 you know, relative to the DCD were not changed. But  
12 there were some configuration and nomenclature changes  
13 initially involving Tier 1 information that would have  
14 required prior NRC approval.

15 Because it was administrative and later,  
16 you know, through the review process, the applicant  
17 determined that they didn't need to make those Tier 1  
18 changes that brought it back to being changes that did  
19 not require prior approval. And we looked at that to  
20 make sure that those conclusions were correct and  
21 determined that they were.

22 In addressing the standard COL on the dose  
23 objectives 10 CFR 50, Appendix I, changes in the  
24 description of the condensate system in Chapter 10  
25 that affect the source term. And now these were

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1 changes in the description that were part of the DCD,  
2 not, it was still IBR. It was not something that the  
3 applicant had done.

4 Affect the source term, but the site  
5 specific parameters of distance, meteorology and land  
6 use, resulted in the need to the applicant to address  
7 how those dose objectives would be achieved under the  
8 site specific situation.

9 And applicant proposed an alternative  
10 methodology to limit radioiodine concentrations in the  
11 coolant that would be achieved through the procedure  
12 of the Offsite Dose Calculation Manual. Next.

13 Now, we'll discuss that further in Chapter  
14 12 since the methodology itself did not involve the  
15 Radwaste systems. However, the condensate  
16 purification system operation capacity are a part of  
17 the process.

18 The initial issue arose during review of  
19 the draft Final Safety Analysis Report for the DCD  
20 That included a substantial increase in the calculated  
21 routine source term due to corrections in the  
22 description of operation of the condensate and feed  
23 water systems that were also incorporated by  
24 reference.

25 These DCD corrections involved how the

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1 condensate flow is described. One of the economies of  
2 the ESPDR is that much of the heat energy remaining in  
3 high pressure intermediate turbine exhausts imparted  
4 to the feedwater to what's called an open feedwater  
5 system. Rather than that being directed to the, I  
6 meant to mention that's called a pump forward  
7 configuration.

8 But that approximately one-third of the  
9 coolant doesn't flow through the condensate  
10 purification system, and so in the change in the  
11 description in the DCD, that changed the routine  
12 source term. Because the review was concurrent with  
13 the application, a change that the applicant had to  
14 address.

15 What they came up with in order to meet  
16 the, because it increased the calculated iodine,  
17 radioiodine concentrations, which increased the dose  
18 to public and with child thyroid limiting that dose.

19 What they propose is if the concentration  
20 in the coolant, not as an effluent, but in the coolant  
21 should reach the point where it would result in a  
22 calculated dose from radioiodine they would limit that  
23 by diverting that flow in the condensate in the  
24 turbine exhaust instead of sending that pump forward.

25 They'd go to what's called a cascade

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1 configuration where that fluid would then go back to  
2 the main condenser and then, you know, the  
3 configuration is physically possible to do that. That  
4 water would then all be through the condensate  
5 purification system which would bring the coolant  
6 concentration back down.

7 Next slide please.

8 And that was, we talked about the other  
9 portions of the application. Are there any questions?

10 CHAIR CORRADINI: More questions? Thank  
11 you very much. We'll move on to Chapter 12.

12 Either of you up again?

13 MR. SMITH: No. Mike Brandon.

14 CHAIR CORRADINI: Oh, I'm sorry.

15 MR. SMITH: Is going to do the  
16 presentation for Chapter 12. I'm sorry.

17 CHAIR CORRADINI: Okay. That's all right.

18 MR. BRANDON: Ready to get started?

19 CHAIR CORRADINI: Oh, yes.

20 MR. BRANDON: All right. Thanks.

21 I'm Mike Brandon and I will be presenting  
22 on Chapter 12. This is the index of the FSAR sections  
23 in Chapter 12. Two of those sections were  
24 incorporated by reference, and then I'll discuss  
25 briefly the other sections that had some standard COL

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1 or EF3 COL items.

2 This slide's on Section 12.1, which is  
3 Ensuring that Occupational Radiation Exposures are as  
4 Low as Reasonably Achievable (ALARA). Basically, the  
5 way this is done where you've incorporated the, in the  
6 NEI templates 07-03A, Generic FSAR Template Guidance  
7 for Radiation Protection, and 07-08A, which is Generic  
8 FSAR Template Guidance for ensuring that occupational  
9 exposures Are As Low as Reasonably Achievable (ALARA).

10 Both of those templates were approved by  
11 NRC in 2009 time frame. And, of course, we comply  
12 with Reg Guide 1.8, which is Qualification and  
13 Training of Personnel for Nuclear Power Plants, Reg.  
14 Guide 8.8, which is Information Relevant to Ensuring  
15 that Occupational Radiation Exposures at Nuclear Power  
16 Plants with the ALARA, and 8.10, which is Operating  
17 Philosophy for Maintaining Occupational Radiation  
18 Exposures, ALARA.

19 Next slide.

20 This slide and the next three slides  
21 address topics in Section 12.2. The first topic is  
22 Plant Sources. The plant sources that we've  
23 identified that weren't part of the permanent plant  
24 design are calibration sources, check sources and  
25 sources associated with radiography.

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1 Next slide.

2 This gets into some of the discussion that  
3 the staff has provided in Chapter 11. We did do a  
4 site specific evaluation for the annual airborne  
5 effluents and annual offsite doses.

6 As was previously stated, some of our Chi  
7 over Qs for the plant were greater than the  
8 corresponding values in the DCD. To compensate for  
9 that, or to accommodate that, we've established some  
10 limits on the iodine limits for the reactor water to  
11 ensure that the Appendix I doses were not exceeded.

12 Just for information, the Part 50,  
13 Appendix I limit, the most binding limit, is the limit  
14 on the thyroid dose. That's a limit of 15 mR per  
15 year. What we calculated for the Fermi 3 site is 11.3  
16 mR per year. So that's the margin that we have.  
17 Crediting the limits for imposing for the RCS lead  
18 contamination levels.

19 MEMBER ARMIJO: How much was the reduction  
20 in the iodine limit, operational limit? Reduced it  
21 from what level to what level? I don't remember what  
22 the number was before we took the.

23 MR. ZIEGLER: I don't recall the number  
24 right off the top of my head, but the number that is  
25 used is what was in the DCD Rev. 6. When the DCD Rev.

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1 7, this is Bill Ziegler at Numerical Applications, DCD  
2 Rev. 7 made the increase in the normal operating  
3 iodine. We retained the DCD Rev. 6 iodine for this  
4 analysis that yielded the 11.

5 MEMBER ARMIJO: 11.3.

6 MR. ZIEGLER: 11.3 child dose. I don't  
7 have the number right off the top of my head, but I  
8 could look it up.

9 MEMBER ARMIJO: I was just curious how  
10 much of a reduction you had to make.

11 MR. ZIEGLER: We can look it up and get  
12 back to you.

13 MEMBER ARMIJO: Yes, if you could, I would  
14 appreciate that.

15 MR. ZIEGLER: I don't recall the number.

16 DR. KRESS: Do you have a continuous  
17 measure of that iodine in the water? Or you take  
18 samples?

19 MR. SMITH: Operationally, there are  
20 technical specification requirements that require you  
21 to do sampling and analysis after revolutions like  
22 power changes and exceeding a certain percentage of  
23 thermal --

24 DR. KRESS: Several periods.

25 MR. SMITH: So just for background on

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1 this, because I think we probably added a little bit  
2 of the why of why we did this. It was an operational  
3 change that was in the way the DCD was described that  
4 was identified. I think by the staff, and then  
5 revised and DCUF 7, that resulted in a net increase in  
6 coolant concentrations.

7 But the coolant concentrations to begin  
8 with are based on NUREG-016, which is based on fuel  
9 performance data from the '70s and '80s. And today,  
10 fuel performance is nowhere near that and to the point  
11 there's a risk that questions the ability for reactor  
12 coolant system leakage detection instrumentation that  
13 is based on to be able to function appropriately.

14 DR. KRESS: That was going to be my next  
15 question.

16 MR. SMITH: Right. So, the reality of  
17 what we've done here is that we would never expect  
18 operationally ever to get near the iodine  
19 concentrations that are specified here in and through  
20 our, you know.

21 I'm sure your familiar with the trend in  
22 fuel performance, that fuel pin failures are very rare  
23 today as they were fairly common 30 years ago. So  
24 that's kind of the background, but this was a --

25 MEMBER ARMIJO: So your initial iodine

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1 limit was really based on a pretty high fraction of  
2 fuel failures during the cycle, but it was still  
3 within your safety analysis.

4 MR. SMITH: Right.

5 MEMBER ARMIJO: But your expectation based  
6 on current fuel performance is going to be far, far  
7 less.

8 MR. SMITH: That I would never expect that  
9 I would ever have to be in a condition where I would  
10 have to take actions to address this particular issue  
11 during operation.

12 MEMBER ARMIJO: Okay. Thank you.

13 MEMBER RYAN: And the last point is, just  
14 so I'm clear on the numbers, that the number that you  
15 get with the fuel performance you expect. Have you  
16 calculated that iodine release? Is that what results  
17 in 11.3?

18 CHAIR CORRADINI: No. That's the assumed  
19 failures or the --

20 MEMBER RYAN: That's the assumed failures.

21 CHAIR CORRADINI: That's what I thought.  
22 Great. Okay.

23 MR. SMITH: So, really the reality --

24 MEMBER RYAN: The margin you have then is  
25 really the margin between what you hope will be in

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1 much improved fuel performance, relative to the 11.4  
2 would.

3 DR. KRESS: If you just, for some reason,  
4 did reach the level that you think is unacceptable,  
5 what action would you take?

6 MR. SMITH: So I'll give you some  
7 operational anecdotes because I used to be the fuel  
8 manager at Fermi, and I've lived through two fuel pin  
9 failures in the last, single pin failures, in the last  
10 15 years. And the reality is that you won't operate  
11 with a failed pin.

12 DR. KRESS: You shut down.

13 MR. SMITH: So immediately what will  
14 happen is, what my experience has been, is we'll  
15 suppress, you know, we'll do suppression testing and  
16 find where the leaker is and then we'll suppress that  
17 assembly by inserting a control right adjacent to it,  
18 which we can do in the BWI.

19 And so then the next thing is my fuel guys  
20 are busily redesigning the core to find the  
21 symmetrical pairs out of the spent fuel pool that we  
22 could reinsert. And at the earliest convenience, we  
23 would shut down and do, and that's what we've done the  
24 last two times.

25 So I would say that's the, kind of what I

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1 would expect. And with INPO fuel performance indices,  
2 it's a big ticket item in the industry. People don't  
3 usually at least in the BWI world, run too long with  
4 a failed pin. It's just, you know, has too many  
5 downstream implications.

6 MR. BRANDON: Another aspect to bear in  
7 mind too is this 11 mR that I quoted is based on  
8 operating for the entire year at the limit. And  
9 certainly that would not occur if there was an adverse  
10 trend, then we'd start taking the actions that Peter  
11 referred to.

12 So it's a value that demonstrates our  
13 design, and can in fact, meet the CFR requirements.  
14 In reality, it's a limit that you wouldn't come near  
15 approaching, just a normal aspect of operations.

16 MEMBER ABDEL-KHALIK: Now, switching from  
17 pump forward to cascaded condensate system operation,  
18 is there something that the operator can do on the  
19 fly?

20 MR. BRANDON: Yes. The capability exists  
21 in the design to do that.

22 MEMBER ABDEL-KHALIK: They can just do  
23 that from the control room?

24 MR. HINDS: This is David Hinds from GEH,  
25 and yes, sir, controls exist from the control room to

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1 be able to shift the drains such that they are  
2 cascading as you've asked. So, yes, it can be done  
3 from the control room. Of course, monitoring, full  
4 plant power, as well as stable operation. Possibility  
5 of, you know, a slight power reduction in order to  
6 reconfigure to make sure that the plant's in a stable  
7 configuration. But it can be done from the control  
8 room.

9 MEMBER ABDEL-KHALIK: And how does that  
10 affect the feedwater temperature?

11 MR. HINDS: The feedwater temperature  
12 should be maintained and in spec, and I will remind  
13 you that the ESBWR is designed for a band of feedwater  
14 temperature for feedwater temperature maneuvering. So  
15 we'd have pre-evaluated the full spectrum of feedwater  
16 temperature versus power, so we have an acceptable  
17 operation.

18 Yes. But I would expect to be very close  
19 to nominal feedwater temperature. However, again, we  
20 pre-evaluate it if there is a divergent from the  
21 normal 420 degrees Fahrenheit feedwater temperature.  
22 We have an acceptable pre-evaluated condition. So it  
23 wouldn't be an abnormal unevaluated situation, if we  
24 did diverge off of 420 degrees Fahrenheit.

25 MEMBER ABDEL-KHALIK: Thank you.

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1 MR. BRANDON: Do you have a picture of the  
2 --

3 MR. HINDS: Yes, we have. There's a  
4 seventh heater, which is the last high pressure here.  
5 That heater is not normally in service, so if we  
6 started diverting some of drains back to the condenser  
7 and lost that preheat from that, we can place the  
8 seventh heater into service which provides additional  
9 heating capacity that is not normally in service.

10 Next slide.

11 MR. HALE: Excuse me. Could I have the  
12 initial question read back so that staff has a chance  
13 to capture it accurately?

14 CHAIR CORRADINI: You mean what Sam was  
15 asking?

16 MR. HALE: Yes, please.

17 CHAIR CORRADINI: Read back. Let me tell  
18 you what I think I wrote down and then, Jerry do you  
19 want to clarify?

20 MR. HALE: No, I just simply had a quick  
21 question about how much of a reduction in the  
22 operational iodine limit did Detroit Edison make?

23 CHAIR CORRADINI: Okay.

24 MR. HALE: And I have a rough idea, but I  
25 would just like the numbers before and after. Thank

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1 you very much.

2 CHAIR CORRADINI: Sure. And then we'll  
3 just, whenever you guys have it, we'll get back then.

4 MR. BRANDON: I think we have the answer  
5 although I was talking to Steve when you were  
6 repeating the question.

7 As far as the concentrations of the iodine  
8 isotopes in the RCS, before and after, the original  
9 DCD values were roughly twice what the values are that  
10 we're proposing as our limits.

11 MEMBER ARMIJO: That's from the DCD 7?  
12 Version 7? Was reduced back to the values in DCD 6?

13 MR. THOMAS: Correct.

14 MEMBER ARMIJO: And that's about a factor  
15 of two?

16 MR. THOMAS: About a factor of two. It  
17 depends on which isotope that you're looking at, and  
18 I can show you the specific numbers after, during the  
19 break if you want.

20 CHAIR CORRADINI: No. But I think at  
21 least to this point, does that answers your question.

22 MEMBER ARMIJO: Yes. That does. And, you  
23 know, the other thing is that your expected iodine  
24 limits are far less based on fuel performance.

25 MR. THOMAS: Yes. Correct.

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1                   MEMBER ARMIJO: I think that's all I need.  
2 Thank you.

3                   MR. THOMAS: Thanks.

4                   MR. BRANDON: Next slide addresses liquid  
5 effluents and associated offsite doses. The Fermi 3  
6 design is actually designed to be a zero discharge  
7 plant, the same as Fermi 2.

8                   We did do a liquid effluent offsite dose  
9 calculation that assumes that we were not a zero  
10 discharge plant, and those calculations demonstrated  
11 that we were a small fraction of the limits.

12                   Next slide.

13                   This slide deals with compliance with 10  
14 CFR 20.1301 and 1302, which are limits to the public.  
15 The offsite doses to the members of the public are  
16 less than the limits in 10 CFR 20.1301. Just to  
17 refresh everyone's memory, those limits are 100 mR per  
18 year and a maximum dose rate of two mR per year.

19                   The offsite doses to members of the public  
20 from the Fermi site dose are less than the limits in  
21 40 CFR 190, and those limits are 75 millirem thyroid  
22 and 25 millirem whole body and 25 to any other organ.

23                   And then lastly, compliance with 10 CFR  
24 20.1302 as demonstrated by showing that the dose  
25 limits are in compliance with 10 CFR 20.1303 and make

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1 sure that those are not exceeded by performing  
2 radiation surveys and through calculations. Basically  
3 use our rem program to demonstrate those doses are  
4 within those CFR limits.

5 Next slide.

6 Those are the Section 12.3, Radiation  
7 Protection. This gets into the discussion we had on  
8 Chapter 11 with the Radwaste Building being  
9 reconfigured. As we stated in the previous  
10 presentation or discussed, the radiation zones were  
11 maintained consistent with the DCD. We did that by  
12 adjusting some wall thicknesses to ensure that was  
13 maintained consistent. And we did have to reconfigure  
14 some of our access and egress routes to reflect the  
15 changes in the floor plan.

16 Next slide.

17 This deals with minimization of  
18 contamination in waste generation. Again, this is  
19 basically achieved by incorporating my reference NEI  
20 08-08A, which is Generic FSAR Template Guidance for  
21 Life Cycle Minimization of Contamination.

22 Next slide.

23 This slide deals with dose assessment, and  
24 then discusses basically the doses that we calculated  
25 to construction workers. The contributors for that

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1 were, the doses we looked at were direct doses,  
2 gaseous effluents and liquid effluents. The sources  
3 that we considered were the operation of Fermi 2 which  
4 is not in place now, but could be in place and  
5 operational during the construction phase and also  
6 sources that are, doses that could be due to the  
7 decommissioning remains of the Fermi 1 plant.

8 Just for your information, the total  
9 cumulative dose that we calculated from those three  
10 sources was somewhat conservative assumptions came up  
11 to 96.6 millirem TEDE compared to a limit of 100, and  
12 then the dose rate, maximum dose rate would be .128  
13 compared to a dose rate limit of 2 mR per hour.

14 And that was for the 10 CFR 20.1301 limits  
15 relative to the 40 CFR 190 limits. Those limits again  
16 were 25 mR whole body. The doses that we had  
17 calculated for that purpose was 1.6 mR, so set your  
18 margin there. And then limit for the thyroid dose in  
19 40 CFR 190 is 75 mR and then we calculated 10.4 mR to  
20 the construction workers.

21 MEMBER RYAN: What's your uncertainly in  
22 that first level which was butting up against the  
23 limit?

24 MR. BRANDON: On the TEDE dose for the  
25 20.1301, that was a very conservative dose we, the

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1 dose due to the decommissioning of Fermi 1 was based  
2 on 25 mR, which is the codified limit. It will be  
3 well below that. The dose for the ISFSI was, I can't  
4 remember. I think it was 8.3. It was some calculated  
5 number based on full loading of ISFSI, which won't be  
6 the case at this time.

7 The doses due to the operation of Fermi 2  
8 was a limiting dose based on some TLDs that we have  
9 staged in the field. It assumes the workers in the  
10 field for 2,080 hours per year, it assumes he's at the  
11 location where dose resources, this limiting dose  
12 resources combined, which in reality, he can't be at  
13 three places at one time. So there's a lot of  
14 conservative analysis.

15 MEMBER RYAN: I understand you bounded it  
16 as close as you can bound it to, you know, it's near  
17 the limit. But what I'm trying to understand is  
18 what's the actual expectation for doses from the  
19 actual sources versus this limit?

20 It's an unrealistic calculation because  
21 you just told me you're not going to get all three of  
22 those events?

23 MR. BRANDON: Right.

24 MEMBER RYAN: So what is the realistic  
25 dose?

1 MR. SMITH: We should go and do a look up.

2 MEMBER RYAN: That would be fine, yes.

3 You understand my question.

4 CHAIR CORRADINI: Yes. Right.

5 MEMBER RYAN: It doesn't give me comfort  
6 when you bound everything and you tell me it's a  
7 number that's a little bit lower than the limit. Even  
8 if it was 75 percent of the limit, I still want to  
9 know what's the actual dose.

10 CHAIR CORRADINI: What's the best  
11 estimate?

12 MEMBER RYAN: Yes, what's the best  
13 estimate?

14 MR. SMITH: The highest.

15 MEMBER RYAN: If it's between the best  
16 estimate and your bounding analysis that I get some  
17 idea of, you know, of what uncertainty might do to  
18 your actual number.

19 MR. SMITH: Plus we've had a significant  
20 operational change in Fermi 2 that will reduce this,  
21 because during this period of time, we were operating  
22 with high hydrogen injection.

23 MEMBER RYAN: Sure.

24 MR. SMITH: With our Noble Chem and we're  
25 now doing Noble Chem, and so most of the dose from

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1 Fermi 2 is the result of.

2 MEMBER RYAN: And all that are things that  
3 should be I think discussed in a best expectation kind  
4 of way. So that would be helpful to understand what  
5 that is.

6 CHAIR CORRADINI: So you guys have that?  
7 You just don't have it with you?

8 MR. SMITH: No. I think the thing is that  
9 what I would do is I would go and look at from a  
10 radiological and environmental monitoring program.  
11 Because these are all REMP TLDs that we take this data  
12 from, and we apply these same limits to people that  
13 are sitting in office buildings that are in the same  
14 location as to where we're going to build Fermi 3. So  
15 that would be probably a more typical estimate based  
16 on actual experience.

17 MEMBER RYAN: That would be helpful.

18 MR. SMITH: And the only thing that's  
19 missing from that is we don't have currently any fuel  
20 in our ISFSI for Fermi 2. So that's, and that was an  
21 eight or nine millirem per year contribution.

22 MR. BRANDON: We have the proof of that.  
23 It's unavailable to me today, but what Peter just  
24 said, we have TLDs in the field.

25 (Simultaneous speaking.)

1                   MEMBER RYAN:  If we could work something  
2                   out that would, you know, kind of explain that, that  
3                   would be fine.

4                   MR. BRANDON:  We'll take that as a follow  
5                   up and we'll have some empirical data we can provide  
6                   on that.

7                   MR. SMITH:  Good.  All right.

8                   MR. THOMAS:  The other follow on piece of  
9                   that is that in order to address uncertainties in that  
10                  dose analysis, or is the monitoring that's discussed  
11                  in the section 12.4.  It will be performed to make  
12                  sure that we don't see the limits.

13                  MR. BRANDON:  Okay.  And then, next slide.

14                  This is the last slide that talks about  
15                  Operational Radiation Protection Program, and  
16                  basically, it refers to the Appendix 12AA and 12BB,  
17                  which incorporate the two NEI standards we previously  
18                  talked about.

19                  And that's all I have.

20                  MEMBER RYAN:  Thanks.

21                  CHAIR CORRADINI:  Okay.  Other questions?  
22                  All right.  Thank you very much.  We'll turn to the  
23                  staff.

24                  MR. ANAND:  My name is Raj Anand.  I'm one  
25                  of the project managers working on the Fermi 3 COL

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1 application. And I thank Detroit Edison for making  
2 their presentation for Chapter 12, the radiation  
3 protection.

4 I agree with Detroit Edison's  
5 presentation. The technical reviewer for Chapter 12  
6 is Charlie Hinson and George Cicotte also helped him  
7 in certain sections of the Chapter 12.

8 Now I turn it over to Charlie Hinson to  
9 present the highlight on status evaluation for Chapter  
10 12.

11 Charlie?

12 MR. HINSON: Okay. Next slide, please.

13 Yes, my name is Charles Hinson. I'm the  
14 Senior HP in the Radiation Protection Branch, and I  
15 was the primary reviewer for Chapter 12, Radiation  
16 Protection. And George Cicotte, who's sitting to my  
17 left, reviewed portions of 12.2 of Chapter 12. And  
18 George will be discussing one of the slides in my  
19 presentation this morning.

20 This slide lists some of the regulations  
21 and review guides used for the review and evaluation  
22 of Chapter 12. The primary governing regulation that  
23 we use is 10 CFR 20, which are standards for  
24 protection against radiation. And Section 20.1406,  
25 which was discussed earlier today, states that "the

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1 applicants for licensees shall describe in the  
2 application how facility design and procedures for  
3 operations will minimize to the extent practical  
4 contamination of the facility and the environment,  
5 facilitate eventual decommissioning and minimize to  
6 the extent practical the generation of radioactive  
7 waste."

8 While the ESBWR DCD describes the design  
9 features of the Fermi plant, the Fermi FSAR describes  
10 those operational and programmatic considerations that  
11 the applicant will implement to prevent the spread of  
12 contamination and thereby facilitate decommissioning.

13 Next slide please.

14 FSAR Chapter 12 is composed of these five  
15 sections. Sections 12.1 and 12.5 address the  
16 applicants in ALARA Program and Radiation Protection  
17 Program, respectively.

18 And as was discussed earlier, NEI Template  
19 07-03, 07-08A, which is Generic FSAR Temple Guidance  
20 for Ensuring that Occupational Radiation Exposures or  
21 ALARA, will be implemented by Fermi for Section 12.1  
22 for the ALARA Program.

23 And NEI Template 07-03A, which is Generic  
24 FSAR Template Guidance for Radiation Protection  
25 Program, has been adopted for Section 12.5 of the

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1 FSAR. And both these templates were developed to be  
2 applicable to all COL applicants, and these two NEI  
3 templates are referencing Appendix 12AA and 12BB of  
4 the FSAR.

5 Sections 12.2 through 12.4 addresses site  
6 specific aspects of the Fermi design. Okay. This  
7 slide, before you know, this slide and the next slide  
8 list all the COL items both standard and site  
9 specific, the departures and supplemental information  
10 that's contained in Chapter 12.

11 Our presentation will focus on the  
12 highlighted portions of these two slides, and George  
13 will address the list of site specific COL items on  
14 airborne effluents and doses and on liquid effluents  
15 and doses.

16 And then I will address the effects of  
17 long-term Radwaste storage departure on the Radwaste  
18 Building on the Radwaste shielding, and the  
19 applicant's compliance with 10 CFR 20.1406 as it  
20 applies to the discharge blowdown line.

21 Next slide.

22 And I will also address the applicant's  
23 evaluation of construction worker doses.

24 Okay. The next slide will be presented by  
25 George.

1 MR. CICOTTE: Okay. This goes back to the  
2 discussion of the proposal alternative methodology in  
3 the ODCM and the process of looking at the cascade  
4 versus pump forward configuration.

5 We looked at that from the standpoint of  
6 evaluating and was it a reasonable alternative  
7 methodology. And as far as whether or not the, you  
8 know, it was both, you know, mechanically feasible and  
9 something, you know, would be ALARA. And I'd like to  
10 re-stress, you know, as far as the amount of increase  
11 in the source term and the calculated dose, you know,  
12 we confirmed that it was in the process of this  
13 difference in the configuration.

14 The approximately one-third flow  
15 difference in the cleanup in the condensate  
16 purification system results in the level eventually  
17 rising to about a two-fold increase.

18 So this process is, it's not something  
19 that's immediate. It presumes a number of concerted  
20 assumptions such as operating, you know, with a 0.25  
21 percent fuel failure for the entire year that this,  
22 you know, process is designed to evaluate.

23 If you look at Part 50, Appendix I, it,  
24 you know, provides enough flexibility in operation  
25 that this is something that they could do if they

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1 ever, you know, reach that point.

2 But as the Applicant pointed out, this is,  
3 you know, far below a level at which you'd have some  
4 kind of a, you know, operational constraint. You  
5 know, it doesn't approach the tech spec limit that  
6 used relative to the Part 20, you know, release rates.  
7 And we concluded that, you know, it was a reasonable  
8 alternative. That's it.

9 MR. CICOTTE: Okay. Next slide, please.

10 MR. HINSON: Okay. The Radwaste Building  
11 described in the ESBWR DCD is designed to hold  
12 approximately six months of Class B and C waste. And  
13 because of the uncertainty of a disposal options for  
14 Class B and C waste by the shutdowns of the Barnwell  
15 facility, the Applicant reconfigured the Radwaste  
16 Building to hold up to ten years of Class B and C  
17 waste, and a maximum of three months of Class A waste.

18 The staff reviewed this departure with  
19 respect to the adequacy of the shielding of the  
20 reconfigured Radwaste Building and also use of design  
21 features to minimize contamination, part of  
22 contamination in the building.

23 As part of our review, the staff compared  
24 the shield wall thicknesses and cubicle layouts for  
25 the reconfigured Radwaste Building with those

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1 described in the ESBWR DCD and found that there were  
2 no resultant changes in the area dose rates in the  
3 Fermi Radwaste Building resulting from the building  
4 reconfiguration.

5 The staff also confirmed that the process  
6 and drain piping from rooms containing high activity  
7 components will be routed to minimize personnel  
8 exposures in accordance with the Guidance contained in  
9 Reg. Guide 8.8.

10 Next slide, please.

11 As stated earlier, the ESBWR document site  
12 specific plant features which comply with the  
13 requirements of 10 CFR 20.1406. Although the Fermi  
14 FSAR does contain a description of those operational  
15 and programmatic considerations implemented to meet  
16 objectives of Reg. Guide 421 and the requirements of  
17 10 CFR 20.1406.

18 The staff requested that the applicant  
19 describe those design features associated with any  
20 underground piping, including the discharge blowdown  
21 line that are incorporated to minimize potential for  
22 unmonitored and uncontrolled releases to the  
23 environment.

24 The Applicant responded, which is  
25 information that's in the DCD, that all underground

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1 piping would either be routed in trenches or in  
2 tunnels and would be accessible for visual inspections  
3 or enclosed within a guard pipe and monitored for  
4 leakage.

5 The liquid Radwaste pipe, which is the  
6 pipe coming out of the Radwaste Building leading to  
7 the blowdown line, coming from the Radwaste Building,  
8 is enclosed within a monitored guard pipe and will  
9 discharge into the discharge blowdown line.

10 At this point, the liquid Radwaste will be  
11 diluted by much large waterflow volume from a  
12 discharge blowdown line. So that the resulting  
13 effluent flow is below the release limits of Table 2  
14 of 10 CFR Part 20, Appendix B.

15 This effluent would then flow underground  
16 through a 48 inch diameter high-density polyethylene  
17 pipe to a discharge point thirteen hundred feet into  
18 Lake Erie. This HPED pipe has no valves, vacuum  
19 breakers. Their other inline components.

20 In order to monitor for leakage from this  
21 line and other potential sources of onsite  
22 contamination, the Applicant will develop a  
23 groundwater monitoring program, which will include the  
24 utilization of groundwater monitoring wells.

25 Monitoring wells will be relied upon to

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1 detect for groundwater contamination, and these wells  
2 should detect contamination before it becomes  
3 widespread and well before compliance with Section  
4 20.1406 is challenged.

5 The Groundwater Monitoring Program will be  
6 consistent with the NRC accepted NEI Template 08-08A,  
7 Generic FSAR Template Guidance for Life Cycle  
8 Minimization of Contamination. And in NEI 08-08A  
9 describes a program which is consistent with the  
10 guidance provided in Reg. Guide 4.21 and also the  
11 requirements of 20.1406.

12 Next slide, please.

13 Okay. Reg Guide 1.206, Combined License  
14 Applications for Nuclear Powerplants, states that,  
15 "The FSAR should include a description of the  
16 estimated doses to construction workers working on a  
17 new reactor from nearby operating units."

18 Since this information was included in the  
19 Fermi Environmental Report, but not in the FSAR, the  
20 staff asked that the licensee, the Applicant, put this  
21 information and provide the basis and assumptions used  
22 by the Applicant to calculate the construction worker  
23 doses in Chapter 12 of the FSAR.

24 As you just heard, the Applicant stated  
25 that the maximum total estimated dose to construction

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1 workers would be 96.6 millirem, which is below the 10  
2 CFR 20.1301 annual dose limit of 100 millirem to a  
3 member of the public. This dose is broken down as  
4 follows, 1.6 millirem of this total comes from gaseous  
5 effluents and 95 millirem comes from direct dose  
6 components, which there are three.

7 The first one was the operating dose rate  
8 from Fermi Unit 2 which was 56.3 rem, and this is  
9 primarily from N16, and Fermi 2 is currently operating  
10 with hydrogen water chemistry so that results in  
11 increased offsite doses.

12 And they're considering implementing a  
13 Noble water program, which has in the past been able  
14 to reduce operating the effluent dose, or not  
15 effluent, excuse me, the direct dose is by up to 83  
16 percent. So this 53.6 millirem component of the 96.6  
17 could be drastically reduced when this program goes in  
18 place.

19 The second component of the direct dose  
20 was the 25 millirem from the decommission site and, as  
21 was stated earlier, that's based on 10 CFR 20.1402  
22 limits of a maximum dose for an average member of a  
23 critical group, which in this case, would be a farmer.

24 And the construction workers are not going  
25 to be working on that Fermi 1 area, so they're not

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1 going to get the 25 rem. And they're also not going  
2 to be farming on it and will get much less than this  
3 25 millirem per year component.

4 And the third component of the direct dose  
5 are estimated was from the Fermi 2 ISFSI and that's  
6 assuming all casks are loaded with 15 year decay. And  
7 currently, there is not ISFSI on site. So, I was, to  
8 answer the question earlier about what is a realistic  
9 estimate of their dose, I would say the 56.3 millirem,  
10 which is the average, the highest dose from a  
11 currently operating Unit 2.

12 In fact, if they use the Noble Water  
13 Chemistry Program that those should be reduced  
14 greatly. The ISFSI dose, once its built in full, that  
15 will be roughly an accurate component. And then the  
16 25 millirem from the decommissioned Fermi 1 site, I  
17 think that's very conservative and probably would be  
18 border maybe five, five millirem.

19 So the 96.6 millirem estimate is very  
20 conservative, not much.

21 MEMBER RYAN: Thanks. That summary is  
22 very helpful. I think that answers my question.

23 CHAIR CORRADINI: So do you want?

24 MEMBER RYAN: No. I don't think we need  
25 any additional information. He covered it. Thank

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1 you.

2 MEMBER ARMIJO: Just to check on that  
3 issue of how much the N16 goes down when you use  
4 Noble, Noble metals and don't have to inject so much  
5 hydrogen. Do you have any operating experience from  
6 other plants that give you confidence that that's a  
7 pretty valid assumption that you're going to have a  
8 major reduction?

9 MR. HINSON: Well, we've, we've seen noble  
10 water, noble metal chemistry, has been widely used in  
11 the industry to do this.

12 MEMBER ARMIJO: Yes, I know that. I just  
13 don't know how much it has reduced the N16.

14 MR. HINSON: Yes, the 83 percent was  
15 quoted by the licensee. I would probably say it may  
16 not be quite that large, but probably --

17 MEMBER ARMIJO: A factor of two is  
18 reasonable then?

19 MR. HINSON: I would say, yes, a factor  
20 of, yes.

21 MEMBER ARMIJO: You cut it in half?

22 MEMBER ARMIJO: Right. I think that's a  
23 reasonable estimate based on current plants, because  
24 a lot of plants are using that.

25 MR. SMITH: We just about have now one

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1 cycle of operation from the two with noble metal  
2 chemistry.

3 MEMBER ARMIJO: Oh, you do?

4 MR. SMITH: Yes. So I don't know what the  
5 dose numbers are today, but --

6 MEMBER ARMIJO: Yes. Okay.

7 MR. SMITH: -- we got to that REMP cycle  
8 where we would get to that.

9 MEMBER ARMIJO: All right. Thank you.

10 MR. HINSON: Okay. And the Fermi site  
11 will be continually monitoring the construction worker  
12 force based on people from, you know, health physics  
13 staff from the operating unit will be monitoring the  
14 doses in the construction area to make sure that the  
15 doses the workers do not approach the 100 millirem per  
16 year limit using their REMP program.

17 And the staff's confirmatory calculations  
18 agreed with the Applicant's best estimates, like I  
19 said. And, therefore, the staff finds that the  
20 Applicant's construction worker dose estimates are  
21 acceptable and conservative.

22 Next slide. Any questions or comments?

23 MEMBER RYAN: That's fine. Thank you.

24 CHAIR CORRADINI: You're okay?

25 MEMBER ARMIJO: All set.

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1 CHAIR CORRADINI: Any questions?

2 MR. HINSON: Okay. Can we proceed on to  
3 content of operations. Thank you.

4 CHAIR CORRADINI: I'm under the assumption  
5 that we're not going to go until noon for it, we could  
6 take a break after we discuss that chapter?

7 MR. SMITH: I'm all for that.

8 CHAIR CORRADINI: You know, I just want to  
9 carry on. I don't want to wait an hour.

10 MR. SMITH: I understand. That's fine.

11 MR. HALE: We're rounding up some of the  
12 staff presenters since we're running a little ahead of  
13 schedule.

14 CHAIR CORRADINI: Yes, I understand.  
15 Round up away.

16 (Off the record comments)

17 CHAIR CORRADINI: Peter or is it Raj?

18 MR. SMITH: Oh, I'm going to speak. This  
19 is Kevin from KLD.

20 CHAIR CORRADINI: Without a score I get.

21 MR. SMITH: I just felt lonely.

22 CHAIR CORRADINI: We can find someone I  
23 think.

24 MR. SMITH: Okay.

25 CHAIR CORRADINI: Go ahead.

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1 MR. SMITH: Ready to go?

2 CHAIR CORRADINI: Yes, sir.

3 MR. SMITH: So before I get into Chapter  
4 13, can you just move to the next slide which has the  
5 layout of topics that are covered by Chapter 13?

6 I just wanted to set a little bit of  
7 background on how we went about Chapter 13 given that  
8 how we developed the FSAR, what our philosophy was.

9 And I think that, you know, I talked about  
10 some of this in our main meeting that the first thing  
11 is we, you know, we had a really high standard of  
12 being faithful to, at that time, North Anna R-COLA,  
13 and even though Chapter 13 to a large degree is site  
14 specific information, you'll see a lot of commonality  
15 between what we, you know, based ourselves off of  
16 North Anna and adapted where necessary to fit our  
17 corporate structure.

18 So a lot of this isn't unique to us. And  
19 we've treated the industry templates that we've  
20 referenced here in the same fashion. Ron May will  
21 attest to how high a barrier I have to go through to  
22 deviate from anything that's being in standard.

23 And then the other thing I wanted to  
24 mention was, you know, much of Chapter 13 is about  
25 future activities, program development, procedure

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1 development, training, implementation and all of those  
2 kinds of things. And as I have laid out in May, I  
3 just wanted to talk about our schedule.

4 Because what we have is, we have a  
5 floating schedule for construction that basically  
6 spans about a ten year period from the point in time  
7 when we would have a corporate authorization to go and  
8 build this plant. And that includes a lot of up front  
9 planning to, you know, execute contracts to do site  
10 reorganization and to support operation of Fermi 2, et  
11 cetera. And we have a good amount of ample tail end  
12 contingency built into the process.

13 So what that has afforded us is the luxury  
14 of time that many of the things that others have some  
15 compression about, because they have early commercial  
16 operation dates, we don't have that same constraint.  
17 So things like getting a simulator in place and all of  
18 those kinds of things, which have been problematic,  
19 are not necessarily critical path items in our  
20 schedule.

21 And then the last thing I wanted to talk  
22 about this schedule is the way we go about, given that  
23 a lot of these are future activities, given that a lot  
24 of these future activities, you know, either show up  
25 in the form of license conditions or they show up as

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1 commitments. Because we've made specific commitments  
2 as follow in our FSAR.

3 Those commitments already exist in our  
4 schedule because that's what we use for our commitment  
5 tracking system, and so we have milestone points  
6 within our schedule that represent commitments.

7 So with that, I'm going to move on to  
8 13.1, which is Conduct of Operations. I'm sorry, the  
9 Organizational Structure. So, there's another page  
10 there, so we have some EF3 COL information that  
11 basically describes our organizational structure for  
12 design construction and operations.

13 Like I said previously, it is not  
14 necessarily unique to us, you know, we have, we show  
15 all of the corporate interfaces in the structure. We  
16 describe all of the positions, the manning and the  
17 schedule for hiring and training.

18 This section also describes the overall  
19 staffing levels. They're estimates at this point, but  
20 they probably represent some pretty good estimates.  
21 Because we used information that we had worked on with  
22 North Anna at the time, as well as our own, from our  
23 experience.

24 All of our selection, training and  
25 qualification requirements are in accordance with ANSI

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1 /ANS 3.1, Selection, Qualification and Training for  
2 Nuclear Power Plant Personnel. And we also described  
3 in this section commonality where there's some  
4 resource commonality between Fermi 2 and Fermi 3.

5 For example, you know, we intend to have  
6 a combined security protection and protected area and  
7 combined security force for both units. Other areas  
8 where there's those kinds of resource savings and some  
9 synergy are in the areas of training, emergency  
10 preparedness and radiation protection.

11 And then from the training program  
12 standpoint, our training program we've incorporated by  
13 reference, the NEI 06-13A Template for an Industry  
14 Training Program Description.

15 Going to the next slide here.

16 So 13.3 we skipped. We'll come back to  
17 that later because that's the emergency plan.

18 And so 13.4 and 13.5 are Operational  
19 Program Implementation and Plant Procedures. And,  
20 basically, we described in these sections the schedule  
21 and milestones for program implementation.

22 And they are all listed in Table 13.4-201,  
23 and we provide all the milestones for the operational  
24 programs. And 13.5 describes plant procedures. It  
25 defines the types of the administrative requirements

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1 that implement the requirements of our quality  
2 assurance program, operating and maintenance  
3 procedures, radiation protection, chemically emergency  
4 plan implementing procedures.

5 And we describe a implementing schedule  
6 for those procedures. And development schedule is  
7 based on really the kind of reasonable kind of, what  
8 kind of procedures they are.

9 Section 13.7 addresses Fitness for Duty  
10 program. And basically what we have done here is we  
11 have committed to any NEI 06-06 Revision 5, which  
12 addresses Fitness for Duty for New Nuclear Power Plant  
13 Construction Sites, satisfies the requirements of 10  
14 CFR 26. And we've established compatible milestones  
15 for its implementation.

16 And as this area is one that seems to  
17 continue to evolve probably a change will be made as  
18 time goes on to maintain the pace with regulations.

19 Next slide.

20 13.8 addresses Cyber Security Plan. And,  
21 again, we have adopted an NEI, NRC endorsed template  
22 for the Cyber Security Plan, and the NEI 08-09,  
23 Revision 6. And the Plan describes the defensive  
24 model. It satisfies the requirements of 10 CFR 73.54.  
25 And, again, we have milestones for implementation of

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1 that program.

2 And then the next slide, we'll turn to the  
3 area of Emergency Planning. And we developed a new  
4 emergency plan for Fermi 3. We've separated it from  
5 Fermi 2. It's very similar to the Fermi 2 plan, but  
6 at the time that we started our combined license  
7 application, the Fermi 2 plan was undergoing a number  
8 of revisions, and it was going to become an  
9 administrative difficulty to try to keep the two in  
10 check.

11 So we separated the plan and we built a  
12 plan that's a Fermi 3 plan. Shares many commonalities  
13 with the Fermi 2 plan. And we share the emergency  
14 operations facility, the joint information center, and  
15 we capitalized with all of our long term relationships  
16 that we have had with the state and our local  
17 governments, counties.

18 And as part of the development of this  
19 plan, we performed a new comprehensive evacuation time  
20 estimate for this project.

21 Next slide, please.

22 So as I mentioned, we have a separate plan  
23 for Fermi 3. I think in the final analysis when we  
24 get to that point, we'll end up with a common plan.

25 CHAIR CORRADINI: So, if I might just

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1 understand this. So the reason you have separate  
2 plans is just because of how the Fermi 2 plan was  
3 being modified?

4 MR. SMITH: Well, the Fermi 2 plan was in  
5 a --

6 CHAIR CORRADINI: Because it was being  
7 modified.

8 MR. SMITH: -- was in a different format  
9 and there were a number of changes that were in play  
10 with the Fermi 2 plan that would have made our  
11 development of our combined license application plan  
12 difficult to keep them in sync.

13 CHAIR CORRADINI: So, okay, if I say it  
14 back to you a different way. What you're saying is  
15 this plan that is documented here is not exactly the  
16 same as Fermi 2 but you expect, when all is said and  
17 done, they will be consistent.

18 MR. SMITH: Correct.

19 CHAIR CORRADINI: Okay.

20 MR. SMITH: Yes. They're not very  
21 inconsistent right now other than when you physically  
22 look at them, they look different.

23 CHAIR CORRADINI: Oh, you mean the way  
24 they read in terms of actions to be taken? But if you  
25 look at the details, they're essentially the same?

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1 MR. SMITH: Correct.

2 CHAIR CORRADINI: Okay.

3 MR. SMITH: Probably didn't explain that  
4 very well.

5 CHAIR CORRADINI: No, no, no. I just ,  
6 because of all things given where we are, this is  
7 important to understand how you have two plants on the  
8 same site. So I just wanted to make sure I understood  
9 what you're telling us.

10 MR. SMITH: Okay. So I'm not too far on  
11 my notes here, so.

12 So the one thing I was going to point out  
13 here that I had, excuse me for a second. The one  
14 thing that we have made it, actually, we'll have a  
15 license condition related to this is the Emergency  
16 Action Levels and will be developed for our ESBWR  
17 based on the methodology and NEI 07-01.

18 And the reason we don't have Emergency  
19 Action Levels specified at this point in time is that  
20 there are design parameters that we need to know in  
21 order to be able to establish those action levels. It  
22 won't be available until some point later in the  
23 process.

24 Next slide, please.

25 So on Emergency Facilities, this just

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1 lists the facilities control room. It's where  
2 everything starts and where everything is commanded  
3 from. Technical Support Center, which is defined in  
4 the DCD. It's located in the Electrical Building.  
5 The Operations Support Center, it's location is also  
6 specified in the DCD in the Service Building.

7 Our Emergency Onsite Facility which  
8 currently exists on the site. It's about a mile and  
9 half from the plant proper in a facility that we call  
10 the Nuclear Operations Center, which is also our  
11 current training facility.

12 And then since we have an onsite EOF, we  
13 also have an alternate Emergency Operations Facility  
14 located about 22 miles from the site, in the Western  
15 Wayne Service Center, which is a Detroit Edison owned  
16 facility.

17 The Joint Information Center is at the  
18 Monroe County Community College, which is about 12  
19 miles on to the west of the site. And our  
20 communications are described in the plan. And all the  
21 communications methods are described in the plan, as  
22 well as what we talked about in Chapter 9, which we  
23 will be talking about a little bit later today.

24 And then finally, this is just a map of  
25 where the site is, showing the Plume Exposure Pathway

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1 within a ten mile radius, and then the Ingestion  
2 Exposure Pathway, the 50 mile radius.

3 CHAIR CORRADINI: Go ahead. I'm sorry.

4 MR. SMITH: Oh, no. We're doing fine  
5 here, so.

6 And then, next slide, please. So  
7 emergency response again. The Control Room is the  
8 center for operational control of the plant. The TSC  
9 manages resources to support the Control Room when  
10 it's activated.

11 OSC provides manpower and support for the  
12 Control Room and TSC for in plant functions. The EOF  
13 directs Emergency Response Organization and  
14 coordinates with offsite agencies. That's where I've  
15 spent most of my time, in Emergency Response  
16 Organizations.

17 And the Joint Information Center is  
18 involved in the dissemination of information to the  
19 media. And nothing really unique.

20 The next slide is.

21 CHAIR CORRADINI: Any of these, just, if  
22 I might, and this is a bit off topic, but just so I  
23 understand. The way you described these functions, do  
24 any of these functions change order or roles if the  
25 site emergency becomes, it goes from various levels

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1 of, if it progresses to the point that I go from a, I  
2 don't know the proper vernacular, but let's say from  
3 a small emergency to a larger emergency.

4 MR. SMITH: So lowest levels in an unusual  
5 event.

6 CHAIR CORRADINI: Right. Do any of these  
7 functions change? That is, is the reporting structure  
8 or the authority move around as I move up the chain of  
9 potential?

10 MR. SMITH: From the standpoint of  
11 manipulating and doing operations within the plant, it  
12 always remains with the shift manager.

13 CHAIR CORRADINI: Okay.

14 MR. SMITH: So, at the lowest level of  
15 emergency, the shift manager fulfills the  
16 responsibilities of an emergency director. That's his  
17 role, and the control room and the control room staff  
18 are all trained.

19 CHAIR CORRADINI: Regardless of the level  
20 of the emergency?

21 MR. SMITH: Exactly. Because if you had  
22 an emergency that --

23 CHAIR CORRADINI: Yes. I just wanted to  
24 make sure.

25 MR. SMITH: Right. Exactly. Yes, so that

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1 command in control always exists within the licensed  
2 shift manager.

3 CHAIR CORRADINI: Okay.

4 MR. SMITH: So then as you escalate in  
5 emergency levels, there are all these administrative  
6 responsibilities that grow with it. And are not  
7 necessarily the focus of the shift organization in  
8 mitigating whatever the casualty is their dealing  
9 with.

10 So that's why the concept of having these  
11 other facilities activate to coordinate outside  
12 activities, and provide information for the shift  
13 manager. But the command authority, you know, for  
14 doing things in the plant always remains with the  
15 shift manager.

16 CHAIR CORRADINI: Okay. But I'm with you  
17 there. So let me ask my question a little bit  
18 differently just to make sure I'm not misstating.

19 So that means as a potentially an  
20 emergency grows in magnitude, all of these things are  
21 become operational but all information must flow to  
22 the same individual or the designated position to make  
23 any decision about the plant operations.

24 MR. SMITH: Right. So we, you know, so  
25 the technical support center, the key word in there is

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1 support.

2 CHAIR CORRADINI: Understood. That's why  
3 I wanted to make sure.

4 MR. SMITH: Is to support. Okay.

5 And the operations support center is  
6 manpower, really field manpower within the plant. The  
7 coordination of that is done by the technical support  
8 center, but it's in conjunction with, no operation is  
9 done in the plant without the agreement of the shift  
10 manager.

11 CHAIR CORRADINI: Okay. Thank you.

12 MR. SMITH: The team works very well  
13 together, so. And then the emergency offsite  
14 facility, the offsite aspect of it is really what it's  
15 function is because it has all of the interfaces with  
16 the offsite organizations.

17 CHAIR CORRADINI: And again, an off, kind  
18 of an off base question, but I'm making sure I  
19 understand. So it's switched now to Fermi 2. There's  
20 exercising of all these command control connections  
21 and information flows in simulations. What is, I  
22 forget, I should know this. What is the frequency of  
23 the simulations you have to go through at these  
24 various emergency levels?

25 MR. SMITH: So, I'm going to.

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1 CHAIR CORRADINI: This is just for  
2 information only for me.

3 MR. SMITH: Every two years we do an  
4 evaluated exercise.

5 CHAIR CORRADINI: But the exercise could  
6 be at various levels of simulators.

7 MR. SMITH: No. No. We do a, there are  
8 very large full participation exercises, but as a  
9 minimum on a two year basis, we do an exercise where  
10 we play with the counties and the state.

11 CHAIR CORRADINI: Okay.

12 MR. SMITH: So that portions of the  
13 exercise, and then I think it's once every six years  
14 that NRC and FEMA.

15 CHAIR CORRADINI: Are involved.

16 MR. SMITH: Are involved. I'm not sure  
17 about that frequency.

18 CHAIR CORRADINI: But that helps me at  
19 least just to --

20 MR. SMITH: Goes beyond my tenure as a  
21 emergency officer.

22 CHAIR CORRADINI: That helps me. Thank  
23 you.

24 MR. SMITH: Okay. So these are the  
25 agencies that we deal with. In the state of Michigan,

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1 I think we're very fortunate. Because the state  
2 police is the center of emergency management in the  
3 state of Michigan. So once the state is involved and  
4 the state emergency operations centers, we really have  
5 one principal point of contact between the emergency  
6 offsite facility and the state.

7 And then they disseminate information to  
8 the counties and others. They provide the interface  
9 for the state of Ohio. They provide the interface  
10 with the Province of Ontario.

11 As to the progress, so we don't find  
12 ourselves dealing with, you know, unprotective action  
13 recommendations to, you know, individual county, and  
14 at least it's done at the state level. And it works  
15 very well.

16 And then, you know, one of the  
17 uniquenesses we have here is where the Province of  
18 Ontario has a small sliver that's within the plume  
19 exposure pathway, and then, of course, the --

20 CHAIR CORRADINI: But you have to deal  
21 with the province's emergency management agencies.

22 MR. SMITH: Yes. Yes.

23 CHAIR CORRADINI: Okay. I forgot about  
24 that. You're right.

25 MEMBER ARMIJO: Yes, I think you're

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1 unique. Is there any plants in the United States that  
2 have that?

3 CHAIR CORRADINI: Davis-Besse, Perry are  
4 not in that situation?

5 MR. SMITH: Davis-Besse's ingestion  
6 exposure pathway would encroach onto Ontario, as well  
7 as the Perry plant I think as well. I think --

8 CHAIR CORRADINI: That's what I was  
9 guessing.

10 MEMBER ARMIJO: But not the plumes.

11 MR. SMITH: Not the plume. I think we are  
12 unique from the standpoint of --

13 CHAIR CORRADINI: And Seabrook is the  
14 other one that went through my head and Vermont  
15 Yankee. Those are the other two that popped in my  
16 head is likely to involve Canadian.

17 MEMBER RYAN: Too far away from the  
18 border.

19 MR. SMITH: Too far away?

20 CHAIR CORRADINI: Well, then never mind.  
21 Sorry. Keep on going. Keep on going.

22 MR. SMITH: Anyway, so that's all I was  
23 going to say on this item. And we have certificates  
24 with all of these entities that, you know, as we put  
25 Fermi 3 into place, they will, they've agreed to work

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1 with us on the plan as they do currently in the Fermi  
2 2, there's certification for that.

3 CHAIR CORRADINI: Okay. Thank you.

4 MR. SMITH: And then the last part of this  
5 was, we were going to talk a little bit about the  
6 evacuation time estimate. Like I mentioned, we had  
7 done a new evacuation time estimate for, as part of  
8 this project.

9 CHAIR CORRADINI: This is for both units  
10 or just for the area regardless?

11 MR. SMITH: For the area. Yes, it's  
12 really, I think independent of the unit. But 14  
13 scenarios were considered. Everything was updated,  
14 you know, relative to the demographics of the area,  
15 considered different times of day, days of week,  
16 season, weather, and seven regions based on wind  
17 direction and strength.

18 And we also considered in this the impact  
19 of evacuation time on Fermi 3 construction workers  
20 during an accident at Fermi 2. And it was utilized in  
21 the development of the emergency plans. And we've  
22 communicated this with the state and the county, so  
23 they have already had the opportunity to take the  
24 benefit of this evacuation time estimate into their  
25 plans. And that's all I was going to say about that.

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1                   And then we have a number of post license  
2                   activities.

3                   CHAIR CORRADINI:   Why don't I just go back  
4                   to that since you highlighted this.   This was required  
5                   as part of the COLA or is this something you did along  
6                   with it just to understand.

7                   MR. SMITH:   We had to update it because it  
8                   --

9                   CHAIR CORRADINI:   Okay.

10                  MR. SMITH:   Yes.   So, and then we, finally  
11                  we have a number of like I indicated, a number of  
12                  milestones for future activities, full participation  
13                  exercise, onsite exercises.   Development of detailed  
14                  implementing procedures in accordance with the  
15                  schedules I mentioned previously for procedure  
16                  development.   And then development of fully developed  
17                  EALs and interaction with the state and counties  
18                  regarding those.

19                  And then we have a number of ITACCs that  
20                  are related to exercising all of the aspects of the  
21                  emergency facilities and the Emergency Response  
22                  Organization in accordance with the plan.

23                  CHAIR CORRADINI:   Okay.   Are there  
24                  questions by the Committee?   We'll turn to the staff  
25                  then if we can.   Staff is this, you got, all your

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1 folks are here?

2 MR. HINDS: We managed to round up twice  
3 the usual suspects.

4 CHAIR CORRADINI: Good. Well, send the  
5 suspects up.

6 MR. TONACCI: Mr. Chairman?

7 CHAIR CORRADINI: Yes.

8 MR. TONACCI: While we're waiting for the  
9 turnover, we are, I think, considerably ahead of  
10 schedule such that after lunch activities could be  
11 pulled forward.

12 CHAIR CORRADINI: I was going to suggest  
13 that. Is this the best time, so you need to contact  
14 other people?

15 MR. TONACCI: My guess, I don't know, I  
16 don't want to over estimate, but my guess is that we  
17 could probably at least start addressing Chapter 9  
18 before lunch. So I'd like to do that after break  
19 maybe, if we could address.

20 MEMBER RYAN: We could take a break now.

21 CHAIR CORRADINI: You want to take a break  
22 now, and we can just coordinate that?

23 MEMBER RYAN: They can take all their  
24 folks and --

25 CHAIR CORRADINI: Yes. All right. Why

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1 don't we take a 15 minute break now and start on the  
2 staff's part of Chapter 13 with the expectation we  
3 would immediately start go in with Chapter 9  
4 following. Okay?

5 MR. TONACCI: We'll start pulling  
6 together. Thank you.

7 CHAIR CORRADINI: All right. So we'll  
8 take a break until 10:15.

9 (Whereupon, the foregoing meeting went off  
10 the record at 9:59 a.m. and went back on the record at  
11 10:16 a.m.)

12 CHAIR CORRADINI: Okay, we're back in  
13 session. Let's get started with the staff's  
14 presentation for Chapter 13.

15 (Off the record comments)

16 MR. HALE: We have a number of presenters,  
17 so we may need to do a little shuffling of chairs.

18 CHAIR CORRADINI: Sure.

19 MR. HALE: But I'm Jerry Hale, Project  
20 Manager for the Fermi application. We're here to  
21 present SER Chapter 13 with no open items.

22 We have a number of presenters, and we'll  
23 start off with Rick Pelton who will present 13.1, 2,  
24 and then 13.5. Okay. Rick.

25 MR. PELTON: Good morning. I'm Rick

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1 Pelton. I'm with the Operating Licensing Human  
2 Performance Branch in NRO, and we were part of the  
3 team that was responsible for reviewing the  
4 application for Sections 13.1, 13.2 and 13.5.

5 In Section 13.1, the Organizational  
6 Structure, there were two COL items. One, which  
7 requires the Applicant to provide, describe management  
8 tech support and operating organizations, and one that  
9 required the Applicant to provide their milestone for  
10 implementing firefighting training.

11 Staff confirmed that both of the items  
12 were addressed and there's no outstanding information  
13 expected to be addressed in the Fermi 3 FSAR related  
14 to this section. And the staff has determined that  
15 the Applicant, that DTE has provided sufficient  
16 information for satisfying the requirements of 50.40,  
17 10 CFR 50.40(b) and 10 CFR 50.54(j-m).

18 Next slide.

19 For 13.2, which is training, there were  
20 two action, two items, one for reactor operator  
21 training and one for non-licensed staff training,  
22 which both require the Applicant to provide a  
23 description of the training and schedule for the  
24 licensed and non-licensed staff. The supplemental is  
25 a requirement to provide a schedule, or description of

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1 on a schedule for implementation of the training  
2 program, which is one of the appendices.

3 The staff's review confirmed that the  
4 items were addressed and that no outstanding  
5 information is expected to be addressed related to  
6 this section. And the DTE has addressed the COL  
7 items.

8 They've addressed the items and satisfied  
9 the requirements of 10 CFR 50.54, 10 CFR 51.20, and  
10 then the operator recall training and non-licensed  
11 staff training. And meet the requirements in Part 52,  
12 and then the operator licensing training and licensor  
13 requirements in Part 55.

14 Next slide.

15 13.5 is Procedures. And, here we go.  
16 They start there as 13.5.1 is Administrative  
17 Procedures and 13.5.2 is Operating and Maintenance  
18 Procedures. And there are many supplemental items  
19 being tracked by DTE related to the procedure  
20 programs.

21 The staff has reviewed the items addressed  
22 in 13.5.1 and in 13.5.2, and we expect no outstanding  
23 information to be addressed in the FSAR.

24 Based on the reviews, the staff has  
25 determined that sufficient information was provided to

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1 satisfy the requirements of 10 CFR 52.79(a) (14), (26),  
2 (29) (i), (29) (ii), (33), and (34), which are all  
3 related to the procedure development program for  
4 operating and emergency operating procedures.

5 That's it. Any questions?

6 CHAIR CORRADINI: None for me.

7 MR. PELTON: Okay. All right.

8 MR. HALE: Thank you, Rick. And Eric  
9 Schrader will present on 13.3, Emergency Planning.

10 MR. SCHRADER: As Jerry said, I'm Eric  
11 Schrader. I'm the lead reviewer for the Fermi 3  
12 Emergency Preparedness section of the COL.

13 The staff review of regulations and  
14 guidance included 10 CFR 52.79 which requires an  
15 applicant for a COL to include information on  
16 emergency planning in their applications that complies  
17 with the requirements of 10 CFR 50.47 and Appendix E.

18 Detroit Edison provided the Fermi 3  
19 emergency plan in Part 5 of its COLA, and in addition  
20 to the plan, the evacuation time estimate analysis for  
21 Fermi ten mile EPZ.

22 10 CFR 50.33(g) requires the applicant for  
23 a COL to include state and local emergency plans and  
24 describe both the ten and 50 mile EPZs. The Fermi 3  
25 emergency plan supplemental information includes the

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1 emergency plans for the state of Michigan, the state  
2 of Ohio and local governments for the counties of  
3 Monroe and Wayne.

4 10 CFR 50.47(a)(1)(ii) requires a finding  
5 of reasonable assurance that adequate protective  
6 measures for the public can and will be taken in the  
7 event of a radiological emergency, prior to the NRC  
8 issuing an initial operating license.

9 10 CFR 50.47(a)(2) requires an NRC finding  
10 of reasonable assurance to include the Federal  
11 Emergency Management, FEMA's finding and determination  
12 as to whether state and local emergency plans are  
13 adequate and whether there is reasonable assurance  
14 that they can be implemented.

15 They also reviewed the 16 planning  
16 standards of 10 CFR 50.47, any additional requirements  
17 of Appendix E to 10 CFR Part 50.

18 The NRC's staff's assessment as to whether  
19 there is reasonable assurance that the Fermi 3  
20 emergency plans are adequate and whether there is  
21 reasonable assurance that they can and will be  
22 implemented takes into account both onsite and offsite  
23 plan reviews.

24 The staff used NUREG 800, Standard Review  
25 Plan for the review of safety analysis reports for a

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1 nuclear power plants light water addition, Reg Guide  
2 1.101, Endorsed Guidance Criteria and NUREG 0654 as an  
3 acceptable method for complying with the planning  
4 standards identified in 50.47(b). Next slide.

5 The staff's review of the emergency plan  
6 focused on whether the plan represented an overall  
7 concept of operations for how the Detroit Edison  
8 emergency organization would respond to a radiological  
9 emergency at the Fermi site to protect the public  
10 health and safety.

11 The staff reviewed and evaluated  
12 evacuation time estimate analysis, dose assessment  
13 capabilities, adequacy of emergency response  
14 facilities, ability to communicate among staff and  
15 among facilities, federal, state and local  
16 governments, siren system and response to hostile  
17 action events.

18 Specifically, they reviewed the technical  
19 support center, which as the DTE representative noted,  
20 it's in the protected area in the electrical building  
21 and meets the standard plant design requirements of  
22 the ESBWR standard design.

23 Evaluation of the TSC size, location,  
24 habitability and ventilation is contained in NUREG-  
25 1966. The operational support center is located in a

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1 service building within a protected area separate from  
2 the control room. The OSC will provide an area for  
3 coordination of shift personnel supporting emergency  
4 response operations without causing congestion in the  
5 control room.

6 Activities include radiological surveys,  
7 repair and operation teams staging, coordination and  
8 how they are sent out into the plant for such things  
9 as first aid, search and rescue, damage control and  
10 emergency repair activities. It's not designed to be  
11 habitable under all emergency conditions, and  
12 emergency plan implementing procedures have provisions  
13 for relocating the OSC as needed.

14 The EOF will be a shared EOF with the  
15 existing Fermi 2 site. It's located approximately  
16 5,000 feet southwest of the proposed Fermi 3 site on  
17 owner-controlled property. It's designed for  
18 habitability in the event of a postulated accidental  
19 radioactive release from Fermi 3.

20 It's designed with a protectant factor of  
21 20, has an HVAC system with HEPA filters and has  
22 durable airborne radioactivity and area radiation  
23 monitors that alarm locally to assure that personnel  
24 exposures to radiological hazards do not exceed 10 CFR  
25 20 limits. Next slide.

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1 Post-COL items, license conditions, open  
2 items and confirmatory items. As Jerry stated, there  
3 are no open items. There are ten confirmatory items  
4 which will require the NRC staff to validate proposed  
5 revisions as being complete in the coming revisions to  
6 the Fermi 3 emergency plan and EP ITAAC.

7 The Applicant has proposed several license  
8 conditions including EP ITAAC to address items such as  
9 implementation milestones, a schedule for submittal of  
10 emergency plan implementing procedures, Emergency  
11 Action Levels developed in accordance with NEI 07-01,  
12 Rev. 0, with no deviations, and finalized letters of  
13 agreement with state and local governments. Next  
14 slide.

15 Results of the NRC staff evaluation of  
16 this information incorporated by reference in the DTE  
17 COLA application are documented in NUREG-1966.  
18 Staff's conclusion for Section 13.3, Emergency  
19 Planning, are subject to the successful closure of  
20 confirmatory items identified in the SER.

21 FEMA has reviewed the emergency plans for  
22 the states of Michigan and Ohio and the counties of  
23 Monroe and Wayne and provided an interim finding  
24 report of reasonable assurance, and concluded based on  
25 its review of offsite plans and procedures, there are

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1 adequate and there is reasonable assurance that the  
2 plans can be implemented with no corrections needed.

3 The DTE COLA includes post-COL activities,  
4 EP ITAAC, which are necessary and sufficient to  
5 provide reasonable assurance for onsite plans.

6 Based on the staff's evaluation of the  
7 Applicant's emergency plan for the proposed Fermi Unit  
8 3, a review of FEMA's report of reasonable assurance  
9 finding regarding offsite emergency planning, the  
10 additional information and proposed textual changes  
11 provided in response to the staff's request for  
12 additional information, the staff finds that the  
13 Applicant's emergency plan meets the standards of 10  
14 CFR 50.47(b) and the requirements of Appendix E to  
15 Part 50. Any questions?

16 CHAIR CORRADINI: Questions?

17 MR. HALE: 13.4, and I'll be presenting on  
18 13.4.

19 CHAIR CORRADINI: Okay.

20 MR. HALE: Operational Program  
21 Implementation. Two COL items 13.4-1-A, Operational  
22 Programs, and 13.4-2-A, Implementation Milestones.  
23 Milestones were included in Table 13.4-201 of the FSAR  
24 includes both milestones, license conditions, that the  
25 Applicant has identified and also commitments that the

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1 Applicant has identified.

2 The Applicant identified, well, there is  
3 a post-license, post-combined license activity, which  
4 states that "the implementation of each operational  
5 program will be evaluated by the staff according to  
6 the respective implementation milestone identified in  
7 13.4-201."

8 And the Applicant identified the following  
9 license conditions. "No later than 12 months after  
10 issuance of the COL, applicant shall submit to the  
11 Director of NRO, a schedule for implementation of the  
12 operational programs listed in Table 13.4-201,  
13 including the associated estimate date for initial  
14 loading of fuel."

15 And the second license condition  
16 identified by the Applicant, "The schedule shall be  
17 updated every six months until 12 months before  
18 scheduled fuel loading, and every month thereafter  
19 until all the operational programs in Table 13.4-201  
20 have been fully implemented."

21 Staff reviewed and concluded that the  
22 Applicant has adequately addressed COL items and  
23 supplemental information regarding the FSAR. Any  
24 questions on 13.4?

25 CHAIR CORRADINI: No.

1 MR. HALE: Okay. We'll go on to 13.5.

2 CHAIR CORRADINI: There's some  
3 duplication. I think that's where we are right?

4 MR. HALE: We're on 13.7, Fitness for  
5 Duty, which will be presented by Wayne Chalk. Wayne?  
6 We need to do a little shuffling.

7 CHAIR CORRADINI: You guys are done?  
8 Thank you.

9 MR. HALE: Wayne.

10 MR. CHALK: Good morning. I'm Wayne Chalk  
11 with the Office of Nuclear Security and Incident  
12 Response. Thank you for allowing me to present  
13 Fitness for Duty for you this morning.

14 I'd like to discuss an overview of our  
15 review, background information, application standards,  
16 technical review and then finally our conclusion on  
17 the application. Next, please.

18 Background information. Our program,  
19 Fitness for Duty, is governed by 10 CFR Part 26. It's  
20 fairly recently published in March of 2008. Became  
21 effective in April of 2008. Its purpose is to provide  
22 guidance, is a very prescriptive regulation on  
23 governing drug and alcohol and fatigue at nuclear  
24 power plants.

25 The phases of the FFD program for the

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1 Applicant were operations program and the construction  
2 program.

3 The application standards for Part 26 are  
4 found in the guidance of Part 26 itself. For the  
5 operational program, it's Subparts a-h, n and o, and  
6 for construction it's Subpart k. The guidance that  
7 the directs the Applicant to comply with Part 26 is 10  
8 CFR 52.79(a)(44).

9 Also there's a reference that's provided  
10 guidance, NEI 06-06, which is construction at nuclear  
11 power plants of the Fitness for Duty program there.  
12 And we're currently under compliance with Revision  
13 number 5.

14 The technical review consisted of the  
15 areas covered being adequacy of the construction phase  
16 and adequacy of the operations phase. There were  
17 milestones listed in the Applicant's Table 13.4-201  
18 and there were no license conditions.

19 Our conclusion is that there is no  
20 outstanding information. There were four confirmatory  
21 items which all have been closed out by Revision 3 of  
22 the application. The COL is acceptable and it  
23 conforms to regulatory requirements. Are there any  
24 questions?

25 CHAIR CORRADINI: Thank you.

1 MR. CHALK: Thank you.

2 MR. HALE: 13.8, Perry. Okay, well,  
3 Section 13.8, Cyber Security, will be presented by  
4 Perry Pederson.

5 MR. PEDERSON: Good morning and thanks for  
6 the opportunity to address the Committee this morning.  
7 My name is Perry Pederson, I'm with NSIR, and we  
8 performed the review of the operating license  
9 applications, as well as the new reactor. Next slide.

10 So the basis for our evaluation, of  
11 course, is the new rule 10 CFR 73.54, which is part of  
12 73.55, and the Cyber Security Program is to be  
13 integrated and part of the Physical Security Program  
14 and is dependent on physical security of course.

15 Appendix G, which is currently undergoing  
16 a revision to address, in particular, from my  
17 perspective, the cyber security events and what is a  
18 reportable event.

19 We reviewed the cyber security plan for  
20 Fermi 3, in accordance with all of this guidance, and  
21 kind of looking at that initial acceptance review LIC  
22 109, we found all the pieces and parts were there and  
23 continued with our review. Next slide.

24 As I'm sure you've heard by now that cyber  
25 security is an operational program. Security is not

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1 an engineering problem that can really be solved by an  
2 equation. It's a program. It's programatic.

3 It requires that kind of attention and  
4 that kind of overview, and so it's not subject to an  
5 ITAAC. However, there will be some audits and  
6 inspections of the program, and Fermi has committed to  
7 be in compliance with 73.54 prior to fuel onsite.

8 The second point here is the clarification  
9 of scope provided by the Commission and in  
10 negotiations with NERC and FERC on the balance of  
11 plant dose systems that have a nexus to radiological  
12 health and safety are included within the scope. So  
13 they will be addressed and have been addressed in  
14 Fermi 3's plan as well. Next slide.

15 The format, or the template used by Fermi  
16 3, was based on NEI 08-09 Revision 6, which we found  
17 acceptable. And this is a point just to clarify from  
18 an earlier statement, NEI 08-09 has not been endorsed  
19 by the NRC.

20 It's a technical distinction, but I think  
21 it's important to make. We found it acceptable for  
22 use and intend to endorse it in the next revision of  
23 our Regulatory Guide 5.71.

24 CHAIR CORRADINI: So, I guess I have  
25 listened to that. So from a process standpoint, until

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1 you endorse it as guidance, you look at each thing  
2 submitted on a case-by-case basis?

3 MR. PEDERSON: Yes, well we did --

4 CHAIR CORRADINI: I just wanted to make  
5 sure I understood.

6 MR. PEDERSON: Right. Right.

7 CHAIR CORRADINI: You've made that subtle  
8 distinction, and I want to understand what that means.  
9 I get it. Thank you.

10 MR. PEDERSON: Yes, and I think the answer  
11 to that is we would still look at everything even if  
12 it were endorsed. We would still look at everything.

13 CHAIR CORRADINI: But it's even more  
14 subtle that I understand then. Let's go on.

15 MR. PEDERSON: Okay. So we found that  
16 these two documents to be equivalent, and that if  
17 Applicant followed the template in 08-09, that that  
18 was acceptable. So, let's see here. Yes, this kind  
19 of jumps to the conclusion, the last bullet, so you  
20 can read that, but let's go to the next slide.

21 Here we have all the sections that are  
22 addressed within the cyber security plan itself. And  
23 there's only one section that deviated from that found  
24 acceptable NEI 08-09 template. And that's the section  
25 on document control and records retention.

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1           And the reason we issued an REI in this  
2 case is that in our review, subsequent to finding that  
3 template acceptable, we had a question with the  
4 language there and whether it actually met the  
5 requirements of the rule.

6           So, in fact, on the operating side doing  
7 the licensing reviews for the operating reactors, we  
8 issued a generic REI to address this question.

9           So this was a case where the Applicant  
10 followed the template, but we found that that template  
11 language, in fact, didn't really meet the requirements  
12 of the rule. So the folks at DTE, they responded to  
13 that REI and we found their response to be acceptable.  
14 So that was the only deviation from the template, but  
15 then that was corrected through the REI process.

16           So unless you have any other questions on  
17 any of these other sections within the cyber security  
18 plan as noted in the previous slide, we found the  
19 submission to be acceptable and provides a good  
20 description of a cyber security program.

21           CHAIR CORRADINI: Are there questions by  
22 the Committee? All right. Thank you very much.

23           MR. PEDERSON: Okay.

24           CHAIR CORRADINI: Yes, Jerry.

25           MR. HALE: As many of you know, recently

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1 the NRC published what's been called the EP rule to  
2 finalize enhancements to emergency preparedness  
3 regulations. I think Dan Barss would like to make a  
4 statement on this.

5 MR. BARSS: Yes. The rule was published  
6 on the 23rd of this month, just a week ago, and it's  
7 effective the 23rd of December. And it does have some  
8 impact on COLs, COL applicants, and we do want to not  
9 make that comment to you since this is kind of a  
10 current event, and to let you know, as far as this  
11 application goes, they are in compliance with the  
12 regulations that were written.

13 And actually written into the rule that's  
14 being published is special language that handles COL  
15 applicants. We've done all this review work and now  
16 we've changed some of the rules, some of the game.

17 And what we've built into the rule is  
18 deferred implementation opportunity for the  
19 applicants. And it hinges on when they'll get their  
20 COL. To get their COL before December 31st of 2013,  
21 they get to see whether they can defer implementation  
22 of these things until after.

23 If they're not going to get their COL  
24 before that, then they have to go back and look at  
25 what changes were made and actually make amendments to

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1 the application and bring it into compliance. And --

2 CHAIR CORRADINI: Substantively, what  
3 sorts of things would be affected by the change in the  
4 rule?

5 MR. BARSS: Most of us, I think all of us  
6 have known about it along the way, so they're pretty  
7 much already in there. Some of the things that have  
8 been, do change, like the evacuation time estimates.

9 They have reduced your requirement for  
10 updating them. There now is a requirement for  
11 updating the evacuation time estimate.

12 And built into the rule now it says for  
13 COL, after the COL is issued, 365 days before they go  
14 to load the fuel, they have to do a review on their  
15 evacuation time estimate and determine whether they  
16 need to make any adjustments.

17 For an operating licensee, they now have  
18 to implement that requirement and do it at the rate  
19 and frequency required. For a COL or early site  
20 permit applicant, they don't have to do that review  
21 until just before they get ready to load the fuel  
22 because obviously there's no danger to the public, you  
23 know, for a plant that's not built or operating yet.

24 CHAIR CORRADINI: Understood.

25 MR. BARSS: So we built in things like

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1 that with the reasonable expectation to when, and  
2 that's probably the biggest one that would impact, you  
3 know, I can think of.

4 And we just want the Committee to know  
5 that the rule was just, you know, passed. It is going  
6 to be implemented as of the 23rd of next month and  
7 there will be some provisions or some changes that  
8 this Applicant will need to look at and consider in  
9 the future.

10 CHAIR CORRADINI: Okay. Thank you very  
11 much.

12 MR. HALE: If there are no further  
13 questions, we'll move on to Chapter 9.

14 CHAIR CORRADINI: No, I think we're set  
15 with Chapter 13. We should move on, if we can, to  
16 Chapter 9. And we welcome Mr. Stetkar to the  
17 Committee.

18 MR. JENKINS: Mr. Chairman.

19 CHAIR CORRADINI: Yes.

20 MR. JENKINS: Perhaps we might want to  
21 consider moving to the follow-on issues from the  
22 October ACRS meeting. One of our reviewers is  
23 physically not here and --

24 CHAIR CORRADINI: Okay.

25 MR. JENKINS: -- and so the flow may work

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1 better if we put Chapter 9 after this next section.

2 CHAIR CORRADINI: That's fine. All the  
3 DTE people are here, so I don't think it matters to  
4 them if we do the issues versus the Chapter 9 first.  
5 Is that all right gentlemen?

6 MR. SMITH: Yes, that's okay.

7 CHAIR CORRADINI: They look happy, so yes,  
8 that's fine. We'll just flip it around. We'll  
9 discuss the things that were essentially follow on  
10 items that we just had individual questions on, that  
11 they were going to come back to us on. And then we  
12 can take Chapter 9.

13 MR. JENKINS: Thank you.

14 CHAIR CORRADINI: Thank you. I hope you  
15 find him. So Peter, you're still, the --

16 MR. SMITH: Yes, I'm going to speak to the  
17 open items.

18 CHAIR CORRADINI: Okay. Do you need any  
19 company up there?

20 MR. SMITH: What's that? Okay. I'm  
21 sorry. I'm just waiting for the slide show to come  
22 up.

23 (Off the microphone discussion)

24 MR. SMITH: So, one, I think you  
25 appreciated one thought provoking questions from the

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1 last meeting.

2 CHAIR CORRADINI: You're very kind.

3 MR. SMITH: All really good questions. So  
4 the first slide on Page 2 is a list of the questions.  
5 There's one not in here that we have integrated and  
6 that was the one related to the hydrogen.

7 CHAIR CORRADINI: Okay.

8 MR. SMITH: And that we've integrated into  
9 the Chapter 9 presentation, which is where we talk  
10 about hydrogen water chemistry and hydrogen storage,  
11 so.

12 CHAIR CORRADINI: Okay.

13 MR. SMITH: So, just a recap of the  
14 questions, and then we'll just move onto the next  
15 slide, which is the first of the questions. And it  
16 was related to the toxic gas analysis.

17 And basically, the discussion around that  
18 was, you know, we had demonstrated that we didn't need  
19 safety-related toxic gas isolation instrumentation.  
20 And the question was raised regarding whether or not  
21 we intended to have some sort of monitoring  
22 instrumentation that would alert the operators.

23 So we went back and looked at that. And  
24 the short answer is that, you know, we don't intend to  
25 install any additional instrumentation. The rationale

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1 for that is, is that, one, we do have a low hazard,  
2 but beyond that, there really is an extensive scheme  
3 of emergency planning activities that are mandated by  
4 the 1986 Emergency Planning and Community Right-to-  
5 Know Act, and EPCRA is what it's referred to, and then  
6 Title 3 of the Superfund Amendments and  
7 Reauthorization Act.

8 And so when I started going into looking  
9 at the scheme that exists within the state and county  
10 emergency planning structures and the training that  
11 goes down right to the level of first responders to  
12 accidents in police and firefighting, and that there's  
13 a scheme that already exists that, you know, based on  
14 the level of an incident that would occur involving  
15 the hazardous materials, we would be informed. And  
16 there are entries into the Monroe County emergency  
17 plan, for example, that talk to that.

18 So that was the conclusion for us. And  
19 then the other, the last piece of that is adding  
20 something additional. It brings with it a number of  
21 long-term operational and maintenance burdens that  
22 tend to take resources that would otherwise be  
23 directed to things that may be more safety  
24 significant.

25 CHAIR CORRADINI: So can I say it back to

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1 you?

2 MR. SMITH: Certainly.

3 CHAIR CORRADINI: No.

4 MR. SMITH: Yes.

5 CHAIR CORRADINI: Because you're covered  
6 by offsite procedures?

7 MR. SMITH: Yes, well, this is --

8 CHAIR CORRADINI: I mean, I'm being  
9 somewhat curt about it, but I want to make sure I'm  
10 clear. What I'm hearing you tell us is that the  
11 onsite chemical hazards are small so, if there were no  
12 offsite surrounding issues, no. But because there are  
13 potential ones, you're covered by procedures that are  
14 offsite and you would be alerted by them?

15 MR. SMITH: Yes.

16 CHAIR CORRADINI: Some train derails, a  
17 car overturns.

18 MR. SMITH: We've already established that  
19 we don't have to have protection --

20 CHAIR CORRADINI: Right.

21 MR. SMITH: -- in the design because of  
22 the distance and low hazards.

23 CHAIR CORRADINI: I understand, but my  
24 logic though is still, what I'm saying from a logical  
25 standpoint is, have I got it right? And that is if

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1 there were something, it would occur offsite, and  
2 offsite authorities would alert you.

3 MR. SMITH: So for example, a  
4 transportation accident on I-75 that involves a  
5 hazardous material. The first responders to that from  
6 the police and the fire --

7 CHAIR CORRADINI: Would alert all people  
8 in the area.

9 MR. SMITH: -- would make an assessment,  
10 and they're trained to do that, of the nature and  
11 significance of that event, and it would escalate  
12 within their plan to the point. And if it was going  
13 to impact us, we would be informed. Okay?

14 CHAIR CORRADINI: All right. The  
15 Committee will speak up if they need to. I just want  
16 to make sure I get it right.

17 MR. SMITH: Okay. No, I appreciate it.

18 Okay. The next one is we wanted to talk  
19 about D-RAP.

20 CHAIR CORRADINI: Mr. Stetkar is here.

21 MR. SMITH: So two things here is that,  
22 you know, we went off and, you know, we hadn't thought  
23 too much about the question that you raised. And the  
24 question really was, you know, if I went off and took  
25 the risk importances that I used for Fermi 2 and

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1 applied them to Fermi 3 I'd get this huge list of  
2 things that shouldn't be in there.

3 So as we went off and reviewed all of the  
4 associated regulatory guidance. What we discovered is  
5 that it's not prescriptive in the guidance as to what  
6 measures we have to use. So --

7 MR. STETKAR: It's not prescriptive in the  
8 regulatory guidance. On the other hand, you have a  
9 DCD with a list of equipment that's based on certain  
10 numerical importance measures and you've committed to  
11 follow NEI guidance that does indeed refer to  
12 different numerical importance measures. And,  
13 therefore, there's an inconsistency in your  
14 commitments.

15 MR. SMITH: But the NEI guidance provides  
16 us flexibility. That's what our conclusion was in the  
17 review of the NEI guidance.

18 Do you want to speak to that Patricia?

19 MS. CAMPBELL: The FSAR refers to NEO  
20 702(a) which refers to NUMARC 9301 for Section 9.3.1,  
21 and it has flexibility in the factors.

22 MR. STETKAR: Okay, it does. On Unit 2,  
23 what numerical importance measures do you do on your  
24 existing maintenance rural program? What numerical  
25 importance measures do you use?

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1 MR. SMITH: I don't know off the --

2 MR. STETKAR: My only point is that if a  
3 certain piece of equipment is deemed to be important  
4 to risk, at a particular plant, because it has a risk  
5 achievement worth of two. In other words, it will  
6 increase the core damage frequency by a factor of two  
7 if it is failed.

8 That's a, it's a numerical measure, but  
9 it's a qualitative assessment of importance. It says,  
10 hey, if this piece of equipment can increase my core  
11 damage frequency by a factor of two, I'm going to  
12 determine that that's an important piece of equipment  
13 and I should take care of it.

14 That's a qualitative assessment of  
15 importance to safety translated into a numerical  
16 measure. Now you're saying, however, on this other  
17 plant, well, I don't care.

18 If this particular piece of equipment  
19 increases my core damage frequency by a factor of 4.9,  
20 I don't care about it, because it's less than five.

21 I don't understand that discrepancy,  
22 especially with a, not a sister unit, but within your  
23 own organization if you're using those risk  
24 achievement worth and Fussell-Vesely importance as  
25 measures of your determination of what is important to

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1 safety.

2 In the Detroit Edison family, how you can  
3 rationalize that something that is two and half times  
4 more important to risk at Fermi Unit 3, isn't  
5 important.

6 So that's the question. There's a  
7 philosophical disconnect here, in my mind anyway.

8 MS. CAMPBELL: I think it goes back to the  
9 --

10 MR. STETKAR: And I don't care about  
11 flexibility. I mean you had the flexibility on Unit  
12 2. You could have used the same type of flexibility.  
13 I would, I don't know what numbers you're using.

14 MR. SMITH: But the core damage frequency  
15 on Fermi 2 is significantly different from --

16 MR. STETKAR: It's a fractional  
17 contribution. It isn't an absolute value.

18 MR. SMITH: Right.

19 MR. STETKAR: That's the reason that they  
20 use fractions and not absolute contributions. But the  
21 determination of the relative importance of a  
22 particular piece of equipment to the safety of that  
23 plant regardless of what the absolute safety is.

24 DR. KRESS: Yes, that's always been a  
25 question I've had. As you know, I'm on the Committee.

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1 And my opinion was that you're really trying to keep  
2 below some sort of acceptance value. And that does  
3 involve the absolute value of CDF and LERF. So it's  
4 always been sort of strange to me that we use  
5 something like a fraction change --

6 MR. STETKAR: It does, but that's what  
7 people use right at the moment.

8 DR. KRESS: I know. But that's always  
9 seemed strange to me.

10 MR. STETKAR: I only bring it up because  
11 the ESBWR and their design certification is the only  
12 design center that's under current review that uses  
13 substantially larger margins, numerical margins.

14 DR. KRESS: I would actually go to a --

15 MR. STETKAR: That's okay.

16 DR. KRESS: -- to an absolute --

17 (Simultaneous speaking.)

18 MR. STETKAR: There are different opinions  
19 about risk metrics. My question was prompted by the  
20 notion that, of the inconsistency between the design  
21 certification. And when we asked GEH about this  
22 during the design certification process, they had a  
23 rationale about why, you know, their margins were  
24 different. It's fine.

25 The question was precipitated in terms of

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1 now Detroit Edison's interpretation of what is  
2 important to safety going forward, and how is that  
3 measure of importance interpreted consistently, you  
4 know, even within the organization. Because, for  
5 example, if at Unit 2 they're using kind of the  
6 traditional numbers that most people use, and I don't  
7 know whether you are or not.

8 DR. KRESS: I think this is a subject that  
9 ACRS ought to be looking into.

10 MR. STETKAR: It gets into the risk  
11 metrics, the whole risk metrics things, but --

12 DR. KRESS: Yes.

13 MR. STETKAR: The subject of this meeting  
14 is, you know. Detroit Edison you're feeling, you  
15 know, a bit of the brunt of this, so, and I know the  
16 flexibility that you can read the words in there. I  
17 know in practice what people use, you know, out in the  
18 industry.

19 MR. SMITH: And, you know, I think it was  
20 clear that we hadn't really thought that far ahead,  
21 you know, in the last meeting. And I don't know that  
22 we're at a conclusion today either.

23 MR. STETKAR: I was going to say, are you  
24 going to clarify that going forward, because it is  
25 addressed not as quantitatively as I brought it up,

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1 but it is addressed in that section of your FSAR,  
2 which is what precipitated the question originally.

3 MR. SMITH: So, ultimately, we will.  
4 Because we're going to cross that bridge.

5 MR. STETKAR: Yes.

6 MR. SMITH: So now that we're aware of it,  
7 we can cross that bridge sooner than later.

8 CHAIR CORRADINI: So tell me the bridge  
9 you're going to cross and when you plan to cross it  
10 on. I understand the issue, but I'm a lot more cloudy  
11 than Mr. Stetkar on this, but the inconsistency  
12 exists. You see it. And now, what is the plan?

13 MR. SMITH: Now? So I have a lot of  
14 things to go through before we even decide to build  
15 this plant. So, and then sometime after that time  
16 frame, I have a milestone that says I'm going to have  
17 these programs in place, so.

18 MR. STETKAR: So most likely, something  
19 about the program implementation will have to be  
20 modified.

21 MR. SMITH: Or we'll have to address it in  
22 our tracking system before then.

23 MEMBER ARMIJO: Or defend it.

24 CHAIR CORRADINI: Yes, but you can't  
25 defend the inconsistency. I guess is what I'm, you

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1 know.

2 MR. STETKAR: What I'm hearing you say  
3 though, Peter, is that you're aware of the  
4 inconsistency --

5 MR. SMITH: Yes, that's what I answered.

6 MR. STETKAR: -- and you're not going to  
7 formally address it until you actually develop the  
8 implementing procedures for your maintenance program.  
9 Is that appropriate?

10 MR. SMITH: There may be others who cross  
11 this bridge before I do as well.

12 CHAIR CORRADINI: And you might be helped  
13 out by them.

14 MR. SMITH: I might benefit from that, or,  
15 and so, but I just --

16 MR. STETKAR: Probably not for ESBWR,  
17 because we have looked at some COL applicants for  
18 other design centers and they, at least in the COL  
19 applicant phase, have used the, let me call them the  
20 traditional risk importance measures. For whatever  
21 reason.

22 MEMBER ARMIJO: I'm confused. Your  
23 handout says there are no inconsistencies between the  
24 D-RAP and the maintenance rule risk significance  
25 measures. And now you're saying there are.

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1 MS. CAMPBELL: But, this is Patricia  
2 Campbell from GEH. There really are no  
3 inconsistencies, and I don't think that it's  
4 appropriate to say that they're inconsistent. The D-  
5 RAP list will become part of the maintenance rule and  
6 the maintenance rule will be developed using the D-RAP  
7 list and it will have an expert panel to look at what  
8 other equipment would be added. And --

9 MEMBER ARMIJO: Did the risk significance  
10 measures come along with the D-RAP list or are they  
11 already specified?

12 MS. CAMPBELL: The D-RAP list is based on  
13 the risk measures that are given in the ESBWR and, I  
14 don't want to speak for DTE, but I understand at this  
15 point, that DTE intends to use that risk measure for  
16 developing the D-RAP list that will become part of the  
17 maintenance rule.

18 So it would basically in the way the FSAR  
19 is written now, it's consistent with the ESBWR. And  
20 the maintenance rule section of the FSAR is also  
21 consistent with ESBWR.

22 And the ESBWR does have the lowest core  
23 damage frequency --

24 MEMBER ARMIJO: I understand that.

25 MS. CAMPBELL: -- and the way that it

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1 appears that some of the NRC guidance is coming out,  
2 and I'm sorry that the NRC staff members are not here  
3 to speak to this. I think it would be good if they  
4 were here.

5 But there is some thought already in the  
6 movement toward using the CDF and that one size  
7 doesn't fit all. So that's already reflected in some  
8 portions of Reg. Guide 1.174, the May 2011 version.  
9 So we don't believe that there are any  
10 inconsistencies, even using the risk measures that  
11 were approved for the ESBWR in implementing the  
12 maintenance rule using those risk measures.

13 CHAIR CORRADINI: Does that help you?

14 MEMBER ARMIJO: Well, it's not what I  
15 heard John say. That's my problem.

16 MR. STETKAR: The problem is an  
17 interpretation, and everything that GEH has said from  
18 a legal licensing prospective, is true. I cannot  
19 dispute anything that they said.

20 The NUMARC document that is referred to  
21 provides guidance, but there's also words in there  
22 that says it's flexibility. All of that being said,  
23 the industry has accepted risk achievement worth and  
24 Fussell-Vesely importance measures. I can't speak for  
25 every utility because I have not looked at every

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1 utility. But they're pretty universally applied.

2 Of risk achievement worth of two and a  
3 Fussell-Vesely importance of .005 as determinations of  
4 risk important structures, systems and components.

5 And many of the other design centers, I  
6 can't speak for all of them because we've not reviewed  
7 all of them, also use those same measures regardless  
8 of what they're currently estimated design  
9 certification incomplete PRAs estimate for what their  
10 core damage frequencies might be. Not knowing what  
11 those core damage frequencies will actually be when  
12 the PRAs are completed and are full scope.

13 So arguments necessarily about absolute  
14 core damage frequency are somewhat speculative until  
15 the PRAs are actually developed to a level of  
16 consistency that comply with all of the standards, you  
17 know, or all of those things that have to be in place  
18 a year before fuel load and everything like that.

19 It's a matter of, in some sense, it's a  
20 matter of philosophy, and this issue is being  
21 discussed with the staff at several levels. And it's  
22 more important. The reason I brought it up with  
23 Detroit Edison is because it's, you know, it's a  
24 matter of sort of corporate interpretation of that  
25 transition process.

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1           And I can understand, you know, I can  
2 understand. I just wanted kind of an answer of  
3 whether you thought about it. I sort of get where  
4 you're headed. And eventually, I understand it will  
5 get sorted out. It's not going to get sorted out  
6 right at the moment.

7           CHAIR CORRADINI: So if I, again, going  
8 from a, now that we've had this conversation, I'm in  
9 Sam's corner about this. I'm fuzzy.

10           So my interpretation is, let's not use the  
11 word inconsistency, but something needs to be sorted  
12 out before this plant is up and running relative to  
13 how something translates from D-RAP into maintenance  
14 rule.

15           MR. SMITH: We agree with that.

16           CHAIR CORRADINI: A sorting out process  
17 needs to be gotten. At least that's how my  
18 understanding is.

19           MR. BRANDON: This is Mike Brandon. My  
20 understanding of this is everything that is now  
21 captured in D-RAP will be captured in the latest rule  
22 program. Okay? What's captured in the maintenance  
23 rule program will grow as our knowledge and detail  
24 design is further developed. Okay?

25           The D-RAP may grow because of that as

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1 well. But also in the maintenance rule, we will  
2 include additional things above and beyond what's  
3 considered D-RAP by the expert panel.

4 CHAIR CORRADINI: That's what I would term  
5 as a sorting out process.

6 MR. BRANDON: Right.

7 CHAIR CORRADINI: Good.

8 MR. BRANDON: So what's in the D-RAP will  
9 by definition be in the maintenance rule. And by  
10 definition, there will be additional things in the  
11 maintenance rule that are identifying, interviewed by  
12 the expert panel.

13 CHAIR CORRADINI: Okay, fine.

14 MR. STETKAR: You just don't know, you  
15 don't know where that --

16 MEMBER ARMIJO: The inconsistency went  
17 away because --

18 MR. STETKAR: -- you know, what the  
19 population of that additional --

20 MR. BRANDON: Right. In the criteria  
21 phase.

22 MR. STETKAR: And the specific criteria  
23 that might be applied.

24 (Simultaneous speaking.)

25 MR. STETKAR: But that's the process.

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1 CHAIR CORRADINI: But that's fine. But I  
2 think we're okay. We should move on. We do have the  
3 lingering generic issue that we will love to talk  
4 about it another time.

5 MR. STETKAR: That's a generic issue. In  
6 fact, we do have, and we're having dialogue with the  
7 staff about that. We have a meeting on it in January.

8 CHAIR CORRADINI: Move to another  
9 question.

10 MR. SMITH: Next one. Loss of offsite  
11 power frequencies. So the question was provide the  
12 basis for the loss of offsite power frequency that was  
13 used in the PRA evaluation. And so, we went back and  
14 did a little bit of homework of where our numbers came  
15 from.

16 And the  $1.73 \times 10^{-2}$  frequency was  
17 based on Fermi 2 PRA analysis which would be updated  
18 to include the 2003 event with a Bayesian update.

19 And that number was previously reviewed  
20 with the staff associated with the license amendment  
21 for Fermi 2 that extended emergency Bayesian generator  
22 AOTs in the 2006 time frame. So that number is less  
23 than the mean that was used in the ESBWR PRA.

24 And we also looked at it from the  
25 standpoint of, you know, what was the distribution

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1 considered in the ESBWR PRA. And, you know, even if  
2 we took the one over 24 events, or two over 24 events,  
3 they're still within the range of uncertainties that  
4 were considered in the PRA.

5 CHAIR CORRADINI: Any comments by the  
6 Committee? I'm going to have turn to somebody else.  
7 John, do you have any comments at this point?

8 MR. STETKAR: No. I think that's fine.

9 CHAIR CORRADINI: And then.

10 MR. SMITH: So the next question.

11 CHAIR CORRADINI: Is going to be picked up  
12 later I guess.

13 MR. SMITH: Well, so we have it later in  
14 our slide. So what I wanted to let you know is what  
15 we were doing on this particular one. This is related  
16 to the service water, loss of service water.

17 So we couldn't answer the question when we  
18 were here last time. And we went back and we looked  
19 into the details of the ESBWR PRA. The initiating  
20 frequency for loss of service water came from the  
21 industry, the industry documents that was considered  
22 for an initiating event.

23 And the ESBWR PRA, as you pointed out  
24 John, did not model the transition from the normal  
25 power heat sink where we would normally be using in

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1 the natural draft cooling towers as our source of  
2 cooling water to the auxiliary heat sink mechanical  
3 draft cooling towers.

4 And so once we had figured that out, we  
5 set GEH off on to turning those number for us. And  
6 over lunch I was going to actually get a --

7 MR. STETKAR: Okay.

8 MR. SMITH: -- review of the numbers. We  
9 have the numbers but they're not verified yet. And  
10 so, but that's the answer to the question. And --

11 MR. STETKAR: I think one of the, I mean  
12 that was, you know, we noted sort of the omission from  
13 the modeling part of the thing that a bit of the  
14 problem on some of the gen-air initiating event  
15 frequencies for things like loss of service water, if  
16 I can call it that, loss of compound of cooling water,  
17 is that the plant-specific configurations of those  
18 fluid systems are so different that it's really  
19 difficult to sort of rationalize the gen-air  
20 frequency.

21 You really do need to look at the plant-  
22 specific configuration and whether any switching is  
23 involved and how many pumps you have and that sort of  
24 thing. It sounds like you're headed down that track,  
25 so that --

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1 MR. SMITH: Which ultimately we will be  
2 required to do with our --

3 MR. STETKAR: Which ultimately you'd be  
4 required to do. It's just a question of how it's  
5 addressed here.

6 MR. SMITH: Okay. Thanks. So we still  
7 owe you some info on that, but it's forthcoming. We  
8 just didn't have enough time.

9 And then the last one, and actually we  
10 wanted to talk about the, the impression was regarding  
11 flooding.

12 MR. STETKAR: This is the one where we  
13 provide bases-wide flooding in the yard is not a  
14 concern?

15 MR. SMITH: Correct.

16 MR. STETKAR: Okay.

17 MR. SMITH: So the ESBWR PRA excludes  
18 consideration of flooding from external sources by  
19 specifying site parameters that preclude flooding from  
20 external sources. The PRA addresses internal flooding  
21 of the plant as an external event. And it says "see  
22 Section 1.3.2 and Section 13 of the PRA."

23 An exclusion is consistent with the ASME  
24 PRA guidance for screening external scenarios with a  
25 frequency of less than  $1E \times 10^{-6}$  events per year. And

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1 the Fermi 3 site characteristics are bounded by the  
2 ESBWR site parameters with margin, and Fermi 3 site  
3 flooding event from external sources has an exceedance  
4 probability of less than  $1E \times 10^{-6}$  is our conclusions.

5 MR. STETKAR: That last bullet, that  
6 statement though, did you do an analysis to confirm  
7 that?

8 MR. THOMAS: No.

9 MR. STETKAR: I mean, that's a statement,  
10 but --

11 MR. THOMAS: That statement's directly from  
12 the ANSI standard ANS-2.8-1992, which is titled,  
13 "Determining Design Basis Flooding at Power Reactor  
14 Sites."

15 It says, "The following combinations of  
16 flood causing events are considered to have an  
17 exceedance probability of less than  $1 \times 10^{-6}$  and shall  
18 be used if they apply as design flood bases for power  
19 reactor sites."

20 So we used that combination of events to  
21 determine our design basis flood.

22 CHAIR CORRADINI: I don't appreciate. Can  
23 you say that again. I'm confused. I'm sorry. Maybe  
24 everybody else got it. I don't get it.

25 MR. THOMAS: The ANSI standard specifies

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1 or provides the methodology for calculating your  
2 design basis flood. And it provides different  
3 scenarios to be considered depending if you're on an  
4 ocean, or if you're a lake, or a stream --

5 CHAIR CORRADINI: Okay.

6 MR. THOMAS: -- and the opening statement  
7 as part of the ANSI standard, or as part of the ANS  
8 standard, you're supposed to look at combinations of  
9 those events occurring simultaneously, you know, could  
10 it be a flood on a nearby stream coupled with a surge  
11 from the lake, a wind driven event in that case.

12 In the opening statement where it talks  
13 about those falling combinations of flood causing  
14 events, it states that these combinations have an  
15 exceedance probability of less than  $1 \times 10^{-6}$ .

16 MR. STETKAR: What's the basis for, I mean  
17 who did, I haven't studied that document. I have  
18 studied a lot of flooding analyses. I have seen a lot  
19 of floods that were predicted as once in 10,000 floods  
20 that have occurred twice in ten years, so I'm aware of  
21 the optimism in outdated documentation. What analyses  
22 were done to justify those numbers for your particular  
23 site?

24 MR. THOMAS: It specifies more the  
25 methodology that's used, you know, which would be,

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1 like in this case, the maximum flood for the Fermi  
2 site is a surge from Lake Erie which is driven from  
3 the east.

4 And you start off with an initial lake  
5 level that's your 100 year lake level, 100 year max.  
6 You apply 100 mile an hour wind. In this case, we  
7 applied 100 mile an hour wind, and it took several  
8 hours to build up that water level to reach the static  
9 water level.

10 Our three second gust at the site is less  
11 than 100 miles per hour, so the probability of having  
12 a 100 mile an hour wind persist for several hours is  
13 a variable probability event. Just, you know, looking  
14 at a three second gust.

15 Our max predicted flood level is 3.9 feet  
16 below site grade. The DCD parameter is one foot below  
17 site grade or the site parameter. So we have 2.9 feet  
18 of margin between the actual flood predicted level and  
19 the DCD parameter.

20 It would take a, you would have to  
21 increase those, you know, either the initial lake  
22 level in combination with that wind to get that flood  
23 level up higher, because if you start pushing that  
24 water level and you have one level towards the west,  
25 it's going to flood out a significant land mass.

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1 MEMBER ARMIJO: Have you analyzed and  
2 dispositioned a seismically-induced flooding  
3 equivalent to a Tsunami from Lake Erie on your site?

4 CHAIR CORRADINI: I think that's what we  
5 just talked about.

6 MEMBER ARMIJO: That was just wind-driven.  
7 You've been doing wind driven. I'm talking  
8 seismically generated.

9 CHAIR CORRADINI: Oh, seismically.

10 MR. THOMAS: We did not calculate a  
11 seismically-induced Tsunami.

12 MEMBER ARMIJO: I don't know anything  
13 about the seismicity of that area or anything like  
14 that but is that part of your analysis?

15 MR. THOMAS: We did look at the history of  
16 tsunamis in the area of the plant and there has been  
17 no recorded events in the vicinity of the plant. And  
18 that's recorded in Section 2.4 of the FSAR.

19 MEMBER ARMIJO: Okay. So basically, you  
20 don't see a risk from a seismic generated --

21 CHAIR CORRADINI: So can I say it back to  
22 you so I get it right? So the last part of how you  
23 kind of worked through your logic, now I get. But  
24 your point is with that margin and with the guidance  
25 that falls below the exceedance probability level?

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1 MR. THOMAS: That is correct.

2 CHAIR CORRADINI: With this combination of  
3 events and with the numerical values you estimated  
4 from the wind, from the highest point in the lake, et  
5 cetera, et cetera.

6 MR. THOMAS: That's correct.

7 MR. STETKAR: And you say even with a 100  
8 mile an hour wind-driven flood, you are still almost  
9 three feet below.

10 MR. THOMAS: We are at 2.9 feet of margin

11 --

12 MR. STETKAR: Of margin, yes.

13 MR. THOMAS: -- below the DCD value.

14 MR. STETKAR: Okay. Okay. All right.

15 Thanks.

16 CHAIR CORRADINI: Anything else from the  
17 Committee? We're going to pick up the service water  
18 when we talk about Chapter 9.

19 MR. SMITH: If we get a chance to convene  
20 here to talk about the numbers.

21 CHAIR CORRADINI: That's fine. That's  
22 fine, but we'll get it eventually. But I understand  
23 where we're going with that.

24 MR. SMITH: And the hydrogen. The one  
25 remaining is the hydrogen that we'll pick up with

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1 Chapter 9.

2 CHAIR CORRADINI: I was confused. That's  
3 my mistake. Okay. Anything else from the Committee?  
4 We can switch over and have you guys begin your  
5 Chapter 9 discussion.

6 MR. SMITH: Okay.

7 CHAIR CORRADINI: Is that all right?

8 MR. SMITH: Yes, that's fine with us.

9 CHAIR CORRADINI: Okay.

10 MR. SMITH: So Ryan Pratt and Nick Latzy  
11 are going to run through this presentation. If you  
12 want to just advance to their first slide of what  
13 we're going to talk about here.

14 Ryan's going to talk about 9.1 and 9.2.  
15 Nick 9.3, and 9.4 is an IBR section, as well as 9(b).  
16 And Nick will be doing 9.5 and 9(a).

17 So with that, Ryan?

18 MR. PRATT: All right. Thank you, Peter.  
19 Good morning. My name is Ryan Pratt, Licensing  
20 Engineer with Detroit Edison. And as he said, I will  
21 be discussing the first two sections of Chapter 9.

22 Section 9.1, Fuel Storage and Handling,  
23 incorporates the DCD by reference with two COL items.  
24 The first item describes the scope of the fuel  
25 handling procedures and it commits to developing these

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1 procedures six months prior to fuel receipt.  
2 Additionally, the first item describes the  
3 requirements for testing and inspection of fuel  
4 handling equipment.

5 The second standard COL item identifies  
6 requirements for handling heavy loads and safe load  
7 path procedures, which are to be developed prior to  
8 fuel load. Inspection and testing requirements for  
9 heavy load lifts are also described.

10 Section 9.2, Water Systems. This section  
11 incorporates the DCD by reference with standard COL  
12 items, standard supplemental information and site-  
13 specific conceptual design information.

14 The first water system described. The  
15 plant water service system is a RTNSS Class C system.  
16 The plant service water system has two independent  
17 redundant trains that provide cooling water to the  
18 reactor component cooling water system and the turbine  
19 component cooling water heat exchangers.

20 The PSWS rejects heat to either the normal  
21 power heat sink or the auxiliary heat sink, and the  
22 normal power heat sink utilizes a natural draft  
23 cooling tower while the auxiliary heat sink uses the  
24 mechanical draft cooling towers.

25 MR. STETKAR: Ryan, you don't have a

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1 drawing of that system here in your slides do you?

2 MR. PRATT: Not in the slides, no.

3 MR. STETKAR: There's one in the back up  
4 slides? Do you have any?

5 MR. PRATT: I don't think so.

6 MR. STETKAR: Doesn't sound right.

7 MR. PRATT: No.

8 MR. STETKAR: Okay. I have a couple of  
9 questions. This relates back again in terms of,  
10 because I'm a PRA guy, and I always think of reality  
11 of the PRA versus the actual design.

12 The PRA says that it conservatively  
13 accounts only for the auxiliary heat sink. I'm sorry,  
14 alternate heat sink. Auxiliary heat sink.

15 It assumes that the cross-tie valves at  
16 both the discharge side of the PSWS pumps and the  
17 return valves to the auxiliary heat sink cooling  
18 towers are all open. Such that, for example, any pump  
19 can supply both trains of reactor cooling water system  
20 or reactor compliment cooling water system and the  
21 turbine component cooling water system and either  
22 cooling tower can cool all of the heat loads.

23 Actually, now I'm assuming you're going to  
24 normally operate the system with flow back to the  
25 normal cooling tower, which means that the return

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1 valves to the alternate heat, auxiliary heat sink  
2 cooling towers will be closed because the water has to  
3 know where it wants to go.

4 Which means that those valves actually  
5 need to open under some conditions, which means they  
6 can be subject to failures, common cause failures,  
7 power supply failures, all kinds of failures that are  
8 not modeled at all in the PRA.

9 Are there, do you know, are there any  
10 signals that will essentially transfer from the normal  
11 heat sink to the alternate heat sink, the auxiliary  
12 heat sink? You know, any automatic signals?

13 MR. SCHUMITSCH: This is Skip Schumitsch  
14 with the GEH. On a loss of preferred power,  
15 everything will align back to the auxiliary heat sink  
16 so I --

17 MR. STETKAR: Okay. So loss of preferred  
18 power is one thing that we'll do that.

19 MR. SCHUMITSCH: I think the main thing  
20 we're concerned about with this normal heat sink of  
21 losing the circ water pumps at that point.

22 MR. STETKAR: Okay. So loss of preferred,  
23 if I looked at the I&C someplace, I'd find at least  
24 that signal that would transfer.

25 When it does that realignment, do you

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1 essentially sectionalize the system so that train A  
2 supply goes to train A loads and comes back to train  
3 A cooling tower and train B supply, if I call them  
4 train A and train B, go to train B loads and come back  
5 to train B cooling tower?

6 MR. SCHUMITSCH: I don't believe the DCD  
7 says that but the FSAR actually says that after ILLOP,  
8 that's what happens.

9 MR. STETKAR: So it actually does  
10 sectionalize. So it's, okay, I mean that sort of  
11 makes sense in terms of cooling capacity because the  
12 PRA essentially says one cooling tower can cool all  
13 loads, but with the return line completely open, half  
14 my molecules are not going to get cooled.

15 And it's not clear to me that a cooling  
16 tower cooling half my molecules can actually cool all  
17 of the loads. So if the line up actually does  
18 sectionalize it, I understand how it will work.

19 It's one thing that you really need to  
20 look at again when you update that PRA to make it  
21 plant specific.

22 MR. SMITH: The success criteria for that  
23 transition.

24 MR. STETKAR: Right, because in this area,  
25 I believe the PRA is quite optimistic in terms of not

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1 looking at either the failure modes or dependencies  
2 because it essentially says you can cool anything with  
3 anything, which is not actually true, especially under  
4 those loss of power conditions.

5 MR. SCHUMITSCH: This is Skip Schumitsch  
6 again. I don't know if it helps, but the reasons I  
7 know these answers is because of the task Peter has  
8 given me to do that.

9 MR. STETKAR: That's excellent. That's  
10 why you're here and it's probably why I'm here. So,  
11 thanks.

12 MR. SCHUMITSCH: Let's see. That's all I  
13 had on plant service water. Thank you.

14 MR. HINDS: This is David Hinds, GEH. We  
15 are doing a sensitivity study at this time for that  
16 specific --

17 MR. STETKAR: There's one thing that I  
18 came up, you know, I don't recall whether I asked it  
19 during the PRA review but, if I were going to do a  
20 bounding-type PRA analysis, I would have probably done  
21 the bounding PRA analysis on the auxiliary heat sink  
22 which you did, but I would have aligned it by train.

23 MR. HINDS: Thanks.

24 MR. PRATT: Okay, next slide.

25 The plant service water system uses carbon

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1 steel piping for both buried and above grade portions.  
2 Corrosion protection is consistent with ASME B31.1 for  
3 the buried portions of the piping.

4 And the PSWS basin has capacity for seven  
5 days of heat removal without active makeup, which is  
6 to be confirmed by an ITAAC. Next slide.

7 MR. STETKAR: Another question. That  
8 calculation for the seven day cooling cites a number  
9 of 1.92 times ten to the tenth BTUs, and I think, I'm  
10 not sure, but that may account only for reactor  
11 compliment cooling water system loads. Is that  
12 correct?

13 MR. LIEBERGEN: This is Adam Liebergen  
14 from Black & Veatch. That does account for reactor  
15 component cooling system loads only, because of the  
16 seven day event you're on diesel power. So you do not  
17 have the turbine component cooling water system  
18 active.

19 MR. STETKAR: Okay. Let's now talk about  
20 not the artifice of design basis single failure  
21 coincident loss of offsite power construct. Let's  
22 talk about real accidents where you indeed would have  
23 a reasonable fraction of the stuff out in the turbine  
24 building still operating needing cooling.

25 Let's talk about the PRA that takes full

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1 credit for the stuff out in the turbine building for  
2 accident mitigation, namely the condensate systems and  
3 the main feed water system that's cooled by turbine  
4 component cooling water.

5 How long can the inventory of water in  
6 your basin remove heat from the reactor component  
7 cooling water system and post-trip, because I grant  
8 you you're going to lose some of your heat loads out  
9 in the turbine building when you trip, but not all.

10 Post-trip heat loads out in the turbine  
11 building which would indeed be the load that you're  
12 evaporating water from. In the real world, when you  
13 have transient events. You understand my question is.

14 You say you can make it for seven days  
15 based on RCCW heat loads. The question is how long  
16 can you make it based on RCCW head loads plus expected  
17 post-trip TCCW heat loads.

18 And if you can't make it for seven days  
19 for that, are the operators instructed to actively  
20 isolate TCCW and what are those instructions?

21 MR. LIEBERGEN: The post seven day  
22 assumption assumes you do not have any of your non-  
23 RTNNS for support.

24 MR. STETKAR: I understand what the  
25 assumptions are.

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1 MR. LIEBERGEN: So that would assume you  
2 don't have the service water, the makeup for the  
3 inventory available, which in this case you also don't  
4 have non-RTNNS would include the turbine component  
5 cooling water system. Again, it's a bounding case  
6 scenario.

7 If you still have these other systems, you  
8 can add water to the pool. You can add makeup water.  
9 We're considering the case where you don't have, you  
10 only have the RTNNS systems available and that's what  
11 the bounding considerations for. It's not a partial  
12 consideration.

13 MR. STETKAR: Okay. So what you're saying  
14 is that under the conditions where you would have the  
15 systems out in the turbine, the loads out in the  
16 turbine building, you would expect to have makeup  
17 capacity to the pool --

18 MR. LIEBERGEN: That's correct.

19 MR. STETKAR: -- under those conditions,  
20 to the basin.

21 MR. HINDS: This is David Hinds. I assume  
22 you're considering the basin pool.

23 MR. STETKAR: Yes, the basin.

24 MR. HINDS: So makeup --

25 MR. STETKAR: You'll have to excuse me.

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1 I'm coming from another meeting where the term pool is  
2 operative so.

3 MR. HINDS: So, yes, the assumptions are  
4 lined up with power supplies and such that the diesel  
5 generator is powering the critical loads, and if the  
6 critical loads would be powered in the case of the  
7 loss of offsite power, if you had the offsite power,  
8 which would be a generic trip event.

9 In fact, a generic trip event might even  
10 go into island mode. However, if you go into a  
11 generic trip event with, including the turbine trip,  
12 then there should be adequate power from all sides --

13 (Simultaneous speaking.)

14 MR. HINDS: So you aren't limited to just  
15 the boil off of the initial inventory.

16 MR. STETKAR: Okay, that makes sense.

17 MR. PRATT: That our reactor component  
18 cooling water heat load is based on having the diesels  
19 providing the power. Since the diesels don't power  
20 those other systems there's sort of a glitch in there.

21 MR. STETKAR: Okay. Okay. Thanks,  
22 thanks, thanks.

23 MR. PRATT: Okay, next slide.

24 Section 9.2 also provides site-specific  
25 conceptual design information regarding the makeup

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1 water system and the demineralization portion of the  
2 makeup water system as described.

3 We also describe the plant-specific  
4 portions of the potable and sanitary water system and  
5 describe how it interfaces with the French town and  
6 township municipal water system.

7 And 9.2 also commits to develop procedures  
8 for identifying and connecting makeup water sources to  
9 the ultimate heat sink seven days after an accident.

10 MR. STETKAR: Where are those makeup  
11 sources? I mean I understand procedures but --

12 MR. PRATT: The fire protection system  
13 could be a makeup source, as well as the fuel and ox  
14 fuel cooling system has connections for various  
15 outside water sources.

16 MR. STETKAR: Well, I'm asking what those  
17 various outside water sources might be. Are we  
18 talking about flying tankers or are we talking about  
19 ships coming in on Lake Erie and laying hoses or are  
20 we talking about Lake Erie or have you identified  
21 those sources? I mean, you know, I can write  
22 procedures about anything.

23 MR. THOMAS: The sources that we've  
24 identified, at least readily available, would be the  
25 circ water basin. There's water available there.

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1 MR. STETKAR: Okay.

2 MR. THOMAS: And obviously, there's a  
3 large water supply called Lake Erie, and we can hook  
4 up a portable pump to.

5 MR. PRATT: We do have other tanks like a  
6 station water tank that would have water in it or  
7 could have water in it that we could use. And there's  
8 always a portable tanker or fire truck we could bring  
9 in if we --

10 MR. STETKAR: Ultimately, it's Lake Erie.

11 MR. PRATT: Correct.

12 MR. STETKAR: Okay.

13 MR. PRATT: Okay, next slide.

14 I'll be going to address a standard COL  
15 item by stating that freeze protection is provided for  
16 the condensate storage and transfer system.

17 And finally, Section 9.2 provides site-  
18 specific information regarding the station water  
19 system. The plant cooling tower makeup supplies  
20 describes, which provides makeup water. Go ahead.

21 MR. STETKAR: You go through these things  
22 so quickly.

23 MR. PRATT: I'm sorry.

24 MEMBER STETKAR: There's probably a method  
25 here. Freeze protection for the condensate storage

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1 transfer system, it gets cold in your part of the  
2 world. Do you have freeze protection for outdoor  
3 tanks for Unit 2?

4 The question is I understand you're going  
5 to provide heat and freeze protection and that's in  
6 addition or clarification anyway. The question is do  
7 you need it, and if so, you know, what's your  
8 operating experience been from Unit 2 in terms of  
9 unique.

10 I'm trying to assess the vulnerability,  
11 you know, since you're installing it, I'm trying to  
12 assess the vulnerability to extremely low temperatures  
13 for that water supply.

14 MR. PRATT: I'm going to get back to you  
15 on --

16 MEMBER STETKAR: It's an operating  
17 experience question, you know, because --

18 MR. PRATT: You know, my recollection was  
19 I don't have any recollection of freeze issues with  
20 outside water tanks at Fermi 2.

21 MR. STETKAR: For Fermi 2.

22 MR. PRATT: For Fermi 2. So we have our  
23 two condensate storage tanks at Fermi 2 are sitting  
24 outside. They're on --

25 MR. STETKAR: But that, I mean do they

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1 have freeze, the question is do they have freeze  
2 protection. Typically, if they have freeze  
3 protection, you know, they'll have sensors that turn  
4 it on and off and you might be able to understand, you  
5 know, how frequently these --

6 MR. PRATT: I don't even recall that ever  
7 showing up on a POD as a problem list or anything like  
8 that. I know we --

9 MR. STETKAR: Yes, I mean, if they don't  
10 you haven't had any problems, you know, I'm fine.

11 MR. PRATT: And then the, you know,  
12 temperatures hover around the freezing point just to  
13 make things miserable, so --

14 MR. STETKAR: Oh, yes.

15 MR. PRATT: -- it's not like we get the  
16 deep freeze for long periods of time, but so --

17 MR. STETKAR: Yes, if you could, you know,  
18 so take a look at Unit 2 operating experience and see,  
19 you know, if you don't have it at all, fine, you know,  
20 I don't care. It's a good, you know, defense on that  
21 sort of issue. If you do have it and it's --

22 CHAIR CORRADINI: He's going to ask you a  
23 question either way, so you better --

24 MR. STETKAR: If you do have it and it's  
25 been required, you know, by some amount of record,

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1 that's information also.

2 MR. SMITH: Yes, we just need to get and  
3 can now pull up a description.

4 MR. STETKAR: Okay.

5 MR. PRATT: And on the station water  
6 system, the plant cooling tower makeup supplies  
7 described, which provides makeup to the cooling tower  
8 basins for both the PSWS and circ water systems. The  
9 pre-treated water supply system, which provides makeup  
10 water to the fire protection system is also described.

11 And if there's no questions on that, then  
12 I'll turn it over to Nick for the rest of Chapter 9.

13 MR. LATZY: Hello again. My name is Nick  
14 Latzy, and I'll be presenting the remainder of Chapter  
15 9, which as Peter stated, will include 9.3, 9.5 and  
16 9(a), the fire hazards analysis.

17 Section 9.3, the Process Sampling System.  
18 In Section 9.3, standard COL item. 9.3.2-1 is  
19 addressed by providing the description of the post-  
20 accident sampling program.

21 The post-accident sampling program meets  
22 the requirements of NUREG 0800. Section 9.3.2 for  
23 actions required in lieu of a post-accident sampling  
24 system. Additionally, 9.3 provides a site-specific  
25 system description stating that the hydrogen water

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1 chemistry system is used to inject hydrogen to the  
2 feed water system and oxygen to the offgas system.

3 The description of the hydrogen storage  
4 facility is provided to satisfy the DCD COL item  
5 9.3.9-2(a) as site-specific information.

6 And finally, on this hydrogen water  
7 storage, the hydrogen water chemistry storage facility  
8 is located within a fenced area outside the plant  
9 protected area and is open to prevent the accumulation  
10 of hydrogen and meets the requirements of EPRI NP-  
11 4947-SR and EPRI NP-5283-SR-A.

12 MEMBER ARMIJO: Is that hydrogen storage  
13 facility common for, does that supply the hydrogen  
14 water chemistry system, as well as other needs, for  
15 example, generators? Is it kind of a common hydrogen  
16 storage facility?

17 MR. LATZY: Yes, it is.

18 MEMBER ARMIJO: Okay.

19 MR. LATZY: And finally, on this slide the  
20 inspection and testing requirements are provided in  
21 Section 9.3.9.4. Next slide, please.

22 The next two slides will provide our  
23 response to a follow-up question from the October 21st  
24 ACRS meeting regarding the hydrogen water chemistry  
25 system. The first bullet, the storing and handling of

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1 hydrogen complies with EPRI-NP-5283-SR-A, guidelines  
2 for permanent BWR hydrogen water chemistry  
3 installations.

4 And the second bullet, I'm going to  
5 describe the design features for the hydrogen storage  
6 in the yard, the distances and system design  
7 parameters, including tank size, line size, operating  
8 parameters are specified so that a tank or line  
9 rupture at the storage location will not have an  
10 adverse impact to safety-related structures or air  
11 pathways into safety-related structures.

12 Piping between the storage location and  
13 the turbine building is routed underground and, per  
14 EPRI-NP-5283, shall be designed for cathodic  
15 protection, or coated and wrapped, for the appropriate  
16 soil conditions such as frost depth and liquefaction  
17 and also for vehicle loads.

18 Excess flow check valves are installed to  
19 limit a large release to the storage location. This  
20 design feature restricts the release to the turbine  
21 building in the event of a line break.

22 And finally on this slide, the PRA assumes  
23 on-site storage facility follows EPRI-NP-5283 and is  
24 considered to be low risk.

25 Any questions? Next slide.



1           On this slide, it'll be the design  
2 features for hydrogen handling in the turbine building  
3 per Reg. Guide 1.189, "Fire Protection for Nuclear  
4 Power Plants," and EPRI-NP-5283, excess flow  
5 protection is designed to ensure that a line break  
6 will not result in the hydrogen concentrations  
7 exceeding two percent, i.e., 50 percent of the lower  
8 explosive limit, with or without ventilation  
9 operation.

10           MEMBER ABDEL-KHALIK: Have you ever had  
11 extensive hydrogen leaks from the generator in Unit 2?

12           MR. SMITH: Yes, we had hydrogen seal oil  
13 from --

14           MEMBER ABDEL-KHALIK: And what is the  
15 maximum leak rate?

16           MR. SMITH: Well, it gets accumulated in  
17 the seal oil and then it's --

18           MEMBER ABDEL-KHALIK: Up to the staff.

19           MR. SMITH: Yes, and I don't recall what  
20 the usage of hydrogen is for the generator.

21           MEMBER ABDEL-KHALIK: A thousand? Two  
22 thousand? Cubic feet per day or?

23           MR. SMITH: It's not that high. I'm  
24 certain of it not being that.

25           MEMBER ABDEL-KHALIK: Well, the normal is

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1 600.

2 MR. SMITH: So we also have a GEC  
3 generator, too, which is a little bit different design  
4 than what's typically installed in U.S. Nuclear  
5 plants. And I'll find out what our usage is.

6 MEMBER ABDEL-KHALIK: Okay.

7 MR. SMITH: But I know we've had a  
8 maintenance history associated with the main generator  
9 and hydrogen usage in the main generator on Unit 2.

10 MEMBER ABDEL-KHALIK: Okay.

11 MR. LATZY: Continuing on. The second  
12 bullet, hydrogen monitors will be installed in the  
13 turbine building. Specific locations will be  
14 determined during detailed design and DCD Figure 9.3-5  
15 provides a simplified diagram.

16 Instrumentation indicates and/or alarms  
17 abnormal or undesirable conditions. DCD provides  
18 requirements to isolate hydrogen supply if normal  
19 building ventilation is lost.

20 And commitments in FSAR Section 9.5 to  
21 perform a compliance review prior to fuel load to  
22 ensure that the Fire Hazards Analysis reflects the  
23 final as-built design. In conclusion, hydrogen does  
24 not present a noxious gas concentration or a  
25 combustion hazard. Next slide. Any questions?

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1 CHAIR CORRADINI: Questions? Okay. Go  
2 ahead.

3 MR. LATZY: In Section 9.3, COL item 9.3-  
4 10-1(a) is addressed with site-specific system  
5 description information for the oxygen storage  
6 facility. As with the hydrogen water chemistry  
7 storage facility, the bulk oxygen storage tank meets  
8 ASME Code Section 8 requirements and the EPRI  
9 documents, as previously stated.

10 In Section 9.3, DCD COL item 9.3-11-1(a)  
11 and 2(a) are addressed with site-specific information  
12 by stating a zinc injection system is not being  
13 utilized. Next slide.

14 Moving into Section 9.5, Other Auxiliary  
15 Systems. Section 9.5 addresses numerous COL items,  
16 some of which include the following. Secondary fire  
17 water source is from Lake Erie.

18 MR. STETKAR: Can I ask you about that?  
19 There's a drawing in the FSAR. It's Figure 9.5-201  
20 that shows the fire protection system yard main loop.  
21 And I got a little confused when, the FSAR says that  
22 that drawing in combination with Figure 9.5-1 in the  
23 DCD defines the fire protection water system.

24 I think I might know how it works, but I  
25 don't want to speculate. The drawing in the FSAR

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1 shows a yard loop with interconnections to several  
2 loads, and in the middle of that drawing, there are  
3 three pumps shown that are not labeled. Are they the  
4 primary fire water pumps or are they the secondary  
5 fire water pumps on that drawing?

6 MR. LATZY: I believe they are the primary  
7 water pumps.

8 MR. STETKAR: Now I'm really confused.  
9 Because if they are, now I'm confused. I don't  
10 understand how the whole thing is piped together. I  
11 thought I knew how it worked, but that's why I didn't  
12 want to speculate. And because they weren't  
13 identified on --

14 CHAIR CORRADINI: Could you quote the  
15 figure on that John?

16 MR. STETKAR: Yes. It's Figure 9.5-201 of  
17 the FSAR. Of the FSAR. And the FSAR descriptions  
18 says, well, the DCD says the scope of the secondary  
19 fire protection system and the yard mains are COL  
20 scope of supply.

21 The FSAR shows the drawing of this yard  
22 main loop with interconnections and three outlines of  
23 pumps and a couple of storage tanks. And it's got two  
24 makeup supplies. One of the makeup supplies is shown  
25 from the line that says station water and the other

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1 line says Lake Erie (FPS secondary pumps).

2 And I couldn't, for the life of me, figure  
3 out how that figure and Figure 9.5-1 in the DCD  
4 communicate with one another to tell me where all of  
5 the pumps and pipes and valves interconnect.

6 And I thought I had it, but when they said  
7 that the three outlines of pumps on the FSAR figure  
8 are indeed, if those are indeed the primary fire water  
9 pumps, and someplace out there, not shown on that  
10 drawing for the line coming in, are the what's called  
11 the secondary fire pumps.

12 Now I'm not quite sure. Because I don't  
13 understand where all of the interconnections are. I  
14 thought I had it, but I was --

15 MR. LATZY: Well, the station water is out  
16 at the Lake.

17 MR. STETKAR: I got the station water. I  
18 understand that one.

19 MR. LATZY: Okay.

20 MR. STETKAR: Where are the fire  
21 protection system secondary pumps? Where are they and  
22 what are they?

23 CHAIR CORRADINI: Do we have information?  
24 Do we need to wait and take it offline so you can  
25 answer his question.

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1 MR. LATZY: Let me take it offline and  
2 come back to answer your question.

3 CHAIR CORRADINI: Okay.

4 MR. STETKAR: Because I wasn't quite sure.  
5 Then anyway, check.

6 MR. LATZY: Okay.

7 CHAIR CORRADINI: So the question is  
8 you're not understanding the whole piping.

9 MR. STETKAR: I'm not understand -- if I  
10 look at the DCD figure, the DCD figure shows  
11 ostensibly the primary fire protection system. The  
12 reason that I'm concerned about this is that the  
13 primary fire protection system provides some, I have  
14 to be careful about what words I have, important  
15 functions let's say. I don't want to use words that  
16 I shouldn't.

17 And it interfaces with the, what's  
18 characterized in the DCD, is the secondary fire  
19 protection system which handles unimportant functions,  
20 that does have cross-connections.

21 CHAIR CORRADINI: Okay. So the piping  
22 system is, at this point, you have questions.

23 MR. STETKAR: I'm a bit confused about --

24 CHAIR CORRADINI: Okay. Right.

25 MR. STETKAR: -- about how those two

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1 drawings are really interrelated to one another.

2 MR. JENKINS: This is Reynaldo Jenkins.  
3 We want to look at that a little bit later after  
4 lunch.

5 MR. STETKAR: You will.

6 CHAIR CORRADINI: Okay.

7 MR. LATZY: Okay. Okay, continuing on.  
8 FSAR Table 9.5-201 supplements the DCD Table 9.5-1  
9 with specific codes, standards and regulatory guidance  
10 outside the scope of the DCD.

11 In addition, 9.5 provides supplemental  
12 information to describe the control of combustible  
13 materials, hazardous materials and ignition sources.

14 This section provides standard COL  
15 information on fire barriers and electrical raceway,  
16 fire barrier systems. It provides standard COL  
17 information with regard to quality assurance controls  
18 of the operational fire protection system program.

19 And lastly, the FSAR contains the  
20 following commitments as they relate to the fire  
21 protection program. Fire pump testing, fire barriers,  
22 manual smoke control, FHA compliance review of final  
23 as-built design, fire brigade and quality assurance  
24 and related procedures. Next slide, please.

25 Section 9.5 provides site-specific

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1 information to address COL items regarding onsite and  
2 offsite emergency communications. These include  
3 provides a description of the Emergency Notification  
4 System, Health Physics Network, Emergency Response  
5 Data System, Crisis Management Radio System, Fire  
6 Brigade Radio System, which is in compliance with Reg.  
7 Guide 1.189.

8 And the transmission system operator  
9 communications link, which is a dedicated line which  
10 is provided between the control room and the power  
11 system operator. Next slide, please.

12 Section 9.5 provides site-specific  
13 information with regard to the diesel generator fuel  
14 oil storage transfer system with a standby and  
15 ancillary diesel generators.

16 The standby diesel fuel oil storage and  
17 transfer system is RTNSS C and the ancillary diesel  
18 fuel oil storage and transfer system is RTNSS B.

19 The first standard COL item is addressed  
20 for both standby and ancillary diesels by stating  
21 procedures and will ensure sufficient onsite inventory  
22 of fuel oil for seven days of continuous operation.

23 Additionally, the site-specific COL item  
24 is addressed for both standby and ancillary diesels by  
25 providing a corrosion protection system used for

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1 underground oil transfer piping.

2 MR. STETKAR: I was going to ask Ryan  
3 this, but he speaks fast enough that he got out from  
4 under it so I'll ask you and, by implication, him.

5 The underground piping. I know that the  
6 diesel fuel oil piping is carbon steel as is the plant  
7 service water piping. Will that piping be direct  
8 buried in soil or will it be routed in underground,  
9 you know, ducts.

10 MR. LATZY: They'll be buried in ducts.

11 MR. STETKAR: So it's not going to be  
12 directly in the soil?

13 MR. LATZY: It won't be direct like that.

14 MR. STETKAR: Okay, good. Are those  
15 ducts, will they have accessibility for external  
16 inspection of the piping?

17 MR. LATZY: Yes.

18 MR. STETKAR: Okay, excellent.

19 MR. LATZY: Thank you.

20 MR. STETKAR: I have one more question for  
21 Ryan but I'll let you finish your stuff before I get  
22 back to him.

23 MR. LATZY: Next slide, please.

24 Finally, in Section 9A, the Fire Hazards  
25 Analysis. Section 9A contains site-specific

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1 information as it relates to the two COL items. One  
2 being the yard fire zone drawings and two being the  
3 FHA for site-specific areas.

4 For the yard zone, for the yard fire zone  
5 area drawings, FSAR Table 9A.5-7R Sheet 1, was  
6 provided for site-specific area on the hydrogen and  
7 oxygen storage area.

8 Additionally, Sheet 2 was added for the  
9 station water intake. For the FHA site-specific  
10 areas, Table 9.5-5R, Sheets 1-9, were added to cover  
11 the Radwaste building reconfiguration and support of  
12 the departure.

13 This concludes my presentation on Chapter  
14 9. Are there any questions?

15 CHAIR CORRADINI: You have a question for  
16 Ryan.

17 MR. STETKAR: For Ryan I do.

18 MR. LATZY: Any questions in Chapter 9,  
19 John?

20 MR. STETKAR: Yes, I do. I have, as a  
21 matter of fact, one for Ryan.

22 Ryan, and this is just kind of point of  
23 information. In the FSAR, I read a little bit of  
24 information that seemed to indicate that the original  
25 design of the underground plant service water system

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1 piping was a, what is it, fiberglass reinforced  
2 polyester pipe.

3 And, you know, it was done for corrosion  
4 resistance and fouling resistance and all the  
5 resistance that that kind of pipe gives you. And  
6 apparently, it was later changed to carbon steel pipe  
7 with coatings and cathodic protection and all that  
8 kind of stuff that that's supposed to give you. Why  
9 was that done?

10 CHAIR CORRADINI: That's one you can kick  
11 upstairs.

12 MR. SMITH: So the reason we did it, is we  
13 didn't have an oar in the water on fiberglass  
14 reinforced on polyester piping and North Anna did.  
15 And so when we took over as the R-COLA, it was  
16 becoming, our issues were all becoming about finding  
17 a suitable regulatory set of standards --

18 MR. STETKAR: Okay, good.

19 MR. SMITH: -- to set that up. So we  
20 abandoned that because we didn't want to have that be  
21 a big focus for us and went to carbon steel piping.  
22 And I guess my full expectation is that there's a lot  
23 of work going on research for establishing a  
24 regulatory scheme for alternate piping materials.

25 And I am confident that that will come to

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1       fruition before I actually need to do this without  
2       being --

3                   MR. STETKAR:  So there still may be  
4       option.  It may go to that, that other piping  
5       material.

6                   MR. SMITH:  Actually, I think our  
7       preference would be to do that, but, you know, they're  
8       all one-offs right now for those alternate materials.  
9       And I think when the scheme of regulation is such that  
10      there's codes and standards that we can apply that to,  
11      we would do that, so.

12                  MR. STETKAR:  That's the sense that I got.  
13      I just wanted to make sure that I sort of understood  
14      the back story, so thanks.

15                  MEMBER ARMIJO:  I had a question for Ryan  
16      on fuel handling going back to Slide 3.  In the ESBWR  
17      with such a tall vessel, I think represents a unique  
18      challenge in fuel handling, and I'm just wondering how  
19      far along you've gotten into your planning or analysis  
20      of how to assure that you can really reduce the risk  
21      of any kind of a fuel assembly drop with an accurate  
22      alignment of all the tooling and you have to in there,  
23      yes.

24                  I'm just wondering, and this is more my  
25      curiosity of how far along Detroit Edison or GEH has

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1 gone in that area?

2 MR. HINDS: This is David Hinds from GEH.  
3 We are working with several, I'll say reputable  
4 refueling bridge manufacturers at this time. We  
5 haven't made the final decision we would do in  
6 conjunction with the plant owner to make the final  
7 procurement decision.

8 However, we have several options where  
9 we've working actively with refueling bridge  
10 manufacturers that we currently have ongoing  
11 relationships with, and this is well within our  
12 capability.

13 Using existing technology with fail safe  
14 grapples, for instance. The added challenge that you  
15 mentioned is really a longer reach which gets into  
16 number of sections in the mast as opposed to really  
17 challenging the technology that would lead to a  
18 potential drop, meaning fail safe grapples for  
19 instance.

20 MEMBER ARMIJO: Well, I know it's doable,  
21 I just didn't know how far.

22 MR. HINDS: Additionally, using state-of-  
23 the-art camera technology because it is quite a  
24 distance for operator visual without the use of  
25 cameras. And so cameras are used as well as state-of-

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1 the-art grapples with fail safe. Then it really gets  
2 into the number of mast sections for the reach.

3 MEMBER ARMIJO: And everything besides --

4 MR. HINDS: And have a very rigid mast in  
5 the, the appropriate number of mast sections. And so  
6 we have been doing mast stack ups and tolerances and  
7 clearances.

8 MEMBER ARMIJO: And will there be testing  
9 of this proposed thing at some point full scale?

10 MR. HINDS: Of course. Yes, they'll be  
11 testing at the manufacturing facility followed by  
12 testing with test weights and dummy fuel assemblies  
13 prior to actual fuel movement.

14 MEMBER ARMIJO: Okay. Thank you.

15 CHAIR CORRADINI: Other questions of DTE?  
16 Okay. At this point, we're at a perfect time to take  
17 a lunch break and then come back with the staff  
18 discussing Chapter 9.

19 MR. JENKINS: Yes.

20 CHAIR CORRADINI: Okay.

21 (Whereupon, the foregoing matter went off  
22 the record at 11:57 a.m. and went back on the record  
23 at 1:02 p.m.)

24 CHAIR CORRADINI: Why don't we get  
25 started.

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1 MR. HALE: I'm Jerry Hale. I'm sitting in  
2 for Mike Eudy who should be here shortly, but  
3 hopefully I can get started with Chapter 9.

4 SER with no open items for auxiliary  
5 systems.

6 MEMBER ARMIJO: Well, I'm sorry. Got to  
7 turn this thing off. There.

8 MR. HINDS: And we'll start with Section  
9 9.2.1, Plant Water Systems. Chang Li was the  
10 technical reviewer on that.

11 MR. LI: My name's Chang Li. I'm with  
12 Balance of Plant Systems Branch and the reviewer for  
13 Section 9.2.1 and 9.2.5.

14 Section 9.2.1, the Plant Service Water  
15 System is a non-safety system and is subject to  
16 regulatory treatment of non-safety system was reviewed  
17 in ESBWR DCD, Fermi FSAR incorporated by reference of  
18 the DCD with the exception of the site-specific issues  
19 such as COL information items, conceptual design  
20 information and interface requirements.

21 The COL information items address the two  
22 resolution water treatment and the corrosion  
23 protections. Supplemental information addressed the  
24 actual interface requirements of basin resource  
25 storage capacity. The conceptual design information,

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1 which has system description, and the table about  
2 plant service water system component design  
3 characteristics.

4 The Applicant provided the plant-specific  
5 design CDI in Sections 9.2.1.2 of the FSAR. The Fermi  
6 system description and component design parameters  
7 adopted CDIs in the design certification, except site-  
8 specific temperature parameters.

9 These parameters, the Fermi site-specific  
10 temperature parameters, are bounded by the temperature  
11 parameters in the design certification.

12 The staff's review of Fermi FSAR issued  
13 nine RAIs. The RAI and RAI responses addressed  
14 material selections, codes and standards, water  
15 treatment programmatic controls, such as maintenance  
16 rules and D-RAP, analysis of basin water capacity,  
17 ITAAC, initial testing, all the RAIs were resolved.  
18 The staff concluded the adequacy of Section 9.2.1.

19 MR. HINDS: Any questions on 9.2.1?

20 CHAIR CORRADINI: Questions from the  
21 Committee? No. Go ahead.

22 MR. LI: Section 9.2.5 is Ultimate Heat  
23 Sink. The ultimate heat sink only have a standard COL  
24 items to address the post seven day makeup to ultimate  
25 heat sink.

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1           The Applicant made a commitment, so for a  
2           fully satisfied their commitment with respect to their  
3           procedures set up for the post seven day water makeup.  
4           The staff found the application acceptable.

5           CHAIR CORRADINI: We'll stop you if  
6           necessary. Keep on going.

7           MR. EUDY: We'll go on to, Rob Vetori is  
8           going to go over Section 9.5.1, Fire Protection  
9           Systems.

10          MR. VETTORI: Good afternoon. 9.5.1, Fire  
11          Protection System. And as you can see, there were  
12          like seven COLAs and supplemental items, and I would  
13          just like to briefly discuss a few of them.

14          For example, 9.5.1-2A, addresses a DCD COL  
15          item regarding the secondary firewater capacity. In  
16          the COL, the Applicant stated that tests will be  
17          performed to demonstrate at the secondary fire  
18          protection pump circuit supplies the required flow and  
19          pressure at the turbine building yard interface  
20          boundary.

21          Another example is COL 9.5.1-10A. That  
22          addresses the DCD COL item regarding fire brigades.  
23          The implementation of the fire brigade will be in  
24          accordance with the milestones in Sections 13.4 for  
25          the fire protection program.

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1           The staff accepts Fermi 3's fire brigade  
2           implementation milestone as given in Section 13.4,  
3           since they will provide appropriate protection  
4           consistent with the plant's completion schedule.  
5           Additionally, the fire brigade requirements of the DCD  
6           are incorporated by reference.

7           And the last example of the COLs, COL  
8           9A.7-2-A, addresses the DCD COL item related to site  
9           detailed fire hazard analysis included under Appendix  
10          9A of the Fermi 3 FSAR.

11          The staff reviewed the information  
12          provided and determined that the detailed fire hazard  
13          analysis of the plant areas that are outside the scope  
14          of the certified design will be completed six months  
15          prior to fuel load.

16          Again, staff accepts site-specific fire  
17          hazard analysis milestones since they will provide  
18          appropriate protection consistent with the plant's  
19          completion schedule.

20          The bottom item down there, the Tier 2  
21          departure. Departure 11.4-1, we've been going over it  
22          this morning. The Applicant has reconfigured the  
23          radwaste building to accommodate the long-term storage  
24          of low level radioactive waste.

25          With respect to the review for Section

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1 9.5.1, the Applicant has revised several, excuse me,  
2 Tier 2 DCD tables. Now, examples of the type of  
3 information provided by these tables are, and there's  
4 a lot of information provided on the tables.

5 But some of the examples are the type and  
6 quantity of combustibles that will be found in each  
7 area, type of detection, system installed in the area  
8 and type of automatic fire extinguishing system  
9 installed. I believe the table was about eight or  
10 nine sheets in length.

11 Additionally, the Applicant has revised  
12 several Tier 2 DCD figures. Information provided on  
13 these revised figures detail the reconfigured layout  
14 of the radwaste building. Next slide, please.

15 Okay. As far as commitments go again,  
16 there are nine commitments affecting fire protection.  
17 I'll just go over a couple of them with you.

18 For example, Commitment 9.5-001 relates to  
19 the testing of the secondary fire protection pump.  
20 Testing will demonstrate at the secondary fire  
21 protection pump supplies a minimum of 2,130 gallons  
22 per minute with a sufficient discharge pressure to  
23 develop a minimum of 107 psi the turbine building yard  
24 interface boundary, which is the level required by the  
25 DCD.

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1           This testing cannot be performed until the  
2 system is built, and the Applicant has specified that  
3 this testing will completed prior to fuel receipt.

4           The last item, the last of those  
5 commitments found at the bottom, 9A-001, 002 and 003,  
6 relate the fire hazard analysis of the yard area  
7 outside the scope of the certified design.

8           Detailed fire hazard analysis of the yard  
9 area that is outside the scope of the certified design  
10 cannot be completed until cable routing is performed  
11 during final design. This information will be  
12 provided six months prior to fuel load.

13           So in the conclusion, staff concludes that  
14 the Applicant has adequately addressed the COLs,  
15 commitments and the departure in the Fermi 3 FSAR.

16           CHAIR CORRADINI: Any questions?

17           MR. EUDY: Okay. We'll have Gene Eagle go  
18 over communication systems.

19           MR. EAGLE: Eugene Eagle, NRO, Division of  
20 Engineering, Instrument Control Branch.

21           This section, 9.5.2, deals with  
22 communication systems. It primarily is associated  
23 with verbal communication systems as compared to  
24 digital transmission. The summary the FSAR Section  
25 9.5.2 is this. It incorporates by reference the ESBWR

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1 design and control document, Section 9.5.2. It  
2 describes the communication systems that provide  
3 intra-plant communications and plant to offsite  
4 communications during normal maintenance, transit,  
5 fire and accident conditions.

6 It addressed five COLA information items  
7 adequately. It dealt with a multiple of independent  
8 and diverse systems, most with alternate power supply  
9 in case of loss of primary power source. A current  
10 status is there are no open items.

11 There was one RAI, and it was closed.  
12 There are no confirmatory items, and the design  
13 adequately conforms to the regulations and guidance.  
14 Slide 2, please.

15 There were five COLA information items  
16 that are summarized, excuse me. Next slide. Whoops,  
17 I'm sorry. Okay. Yes, that's okay. Thank you.

18 There were five COLA information items as  
19 presented on the slide here. It covers communications  
20 from both onsite and also the communications to  
21 offsite agencies and to the emergency personnel,  
22 medical facilities and many other types of areas.

23 The systems have equipment with the  
24 capability to provide emergency communications support  
25 for the main control room, the TSC, the EOF and OSC

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1 for security, fire brigade, emergency plan, links to  
2 the NRC, principal response organizations,  
3 governmental units and the public.

4 The system equipment includes the use of  
5 radio, private and public telephone, public address,  
6 sound powered phones, fax, microwave, remote warning  
7 sirens and backup power as uninterruptible power  
8 supplies and batteries.

9 The system, the main point, is that it has  
10 a considerable amount of diversity and independence.  
11 If one system is lost, it doesn't effect other  
12 systems, and how other systems be used as alternates.

13 Is there any questions?

14 CHAIR CORRADINI: Questions? We're all  
15 right.

16 MR. EUDY: In conclusion of Chapter 9, the  
17 staff finds that the Applicant has adequately  
18 addressed the relevant information in the DCD and  
19 Applicant has met the applicable regulations and is in  
20 conformance with applicable guidance with respect to  
21 items in Chapter 9 FSAR.

22 Jerry, could you talk about the summary of  
23 the Chapter 9 issues raised?

24 MR. HINDS: We do have some follow-up  
25 items from just prior to lunch. I think there were

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1 several questions --

2 MR. EUDY: Right.

3 MR. HINDS: -- and I believe, Peter, I  
4 think your guys are prepared to address those?

5 CHAIR CORRADINI: Is this the time you  
6 want Peter back up there?

7 MR. HINDS: If there are no further  
8 questions.

9 CHAIR CORRADINI: We're fine with the  
10 staff's review of Chapter 9, so --

11 MR. HINDS: Okay, that you.

12 CHAIR CORRADINI: So we'll just go to  
13 general clarification questions that we had during the  
14 day.

15 (Off the microphone comments)

16 MR. HINDS: Just to repeat, here are the  
17 four items that I recorded. There was a question  
18 related to freeze protection and operating experience.  
19 There was a question on the leak rate, the hydrogen  
20 leak rate, maximum leak rate.

21 CHAIR CORRADINI: For the generators?

22 MR. HINDS: And there was a question about  
23 the location of the fire protection system secondary  
24 pumps. And then a question about the difference about  
25 the DCD drawing that the FSAR drawing for fire

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1 protection.

2 CHAIR CORRADINI: Yes. Pick any one you  
3 want.

4 MR. SMITH: Okay. So the first two  
5 related to the follow-ups on FERMI 2, I'm not prepared  
6 to answer. I need to do some follow-up with the  
7 plant.

8 MR. THOMAS: Peter?

9 MR. SMITH: Yes.

10 MR. THOMAS: Really quick. The tank does  
11 have a steam supply from the aux boiler for freeze  
12 protection. But I don't know. The question is the  
13 operating experience.

14 MR. SMITH: Yes, so we need to do a  
15 follow-up on that.

16 CHAIR CORRADINI: Okay.

17 MR. SMITH: And then on the figures  
18 related to the fire protection system it appears we  
19 have an inaccuracy in the drawing that John was  
20 looking at this morning, relative to the text. The  
21 text all appears to be right. But the drawing has, at  
22 least it looks like, we have a connection point that's  
23 wrong.

24 CHAIR CORRADINI: Missing?

25 MR. SMITH: Wrong. Or appears to be in

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1 the wrong place. So we'd like to do some more follow-  
2 up on that to make sure that that's --

3 CHAIR CORRADINI: So this in that DCD or  
4 in --

5 MR. SMITH: No, this is in our FSAR.

6 MR. THOMAS: The question about where the  
7 secondary pumps were located at. Those are located  
8 out at the station water intake structure. And  
9 there's two pumps and then there's also a jockey pump  
10 similar to the primary pump configuration. But like  
11 Peter said, the connection shown on the figure needs  
12 to be corrected.

13 CHAIR CORRADINI: Okay.

14 MALE PARTICIPANT: Hydrogen leakage rate  
15 from the generator, or usage rate from the generator  
16 on --

17 MR. SMITH: Right, so that's another FERMI  
18 2 follow-up. So the first two.

19 CHAIR CORRADINI: So those will be coming  
20 later?

21 MR. SMITH: Right.

22 CHAIR CORRADINI: All right. That's fine.  
23 Any other questions? Does the staff have any comments  
24 to make?

25 MR. JENKINS: We have no comments at this

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1 time.

2 CHAIR CORRADINI: Okay.

3 MR. SMITH: So over the lunch period I had  
4 a short briefing on the question about the PRA  
5 treatment of the service water system alignment  
6 configuration. And we can talk about the result of  
7 that. I was going to get Skip Schumitsch from GEH to  
8 come and talk about that if that's acceptable.

9 CHAIR CORRADINI: That's fine.

10 MR. SMITH: And we have a handout to  
11 provide here. And, Skip, why don't you come up.

12 MR. SCHUMITSCH: So just a quick summary  
13 again. What the question was was provide the basis  
14 for a loss of service water frequency using the PRA  
15 valuation, given that there may be a difference in  
16 service water system alignment.

17 So the DCD allows two alignments, I don't  
18 think there was any question about that. You could  
19 either be aligned to the auxiliary heat sync, the PSWS  
20 basin, or you can be aligned to the normal plant heat  
21 sync, which in FERMI's case is the large natural draft  
22 cooling tower.

23 So in both cases the PSWS pumps are going  
24 to suction from the basin. They go to the heat loads  
25 and the two trains. They come back and in one

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1 situation they go to the cooling towers in the PSWS  
2 basins and the water falls back into the basins, cycle  
3 repeats.

4 In the other situation they go to the  
5 natural draft tower and the circ water pumps bring  
6 that cooled water back into the service water basin.  
7 So again, both of those are perfectly acceptable for  
8 the DCD.

9 And as Member Stetkar mentioned, our PRA  
10 model, the one in the DCD, only modeled the one where  
11 you're normally aligned to the PSWS basin. So what  
12 Peter had as to --

13 CHAIR CORRADINI: Which is an alternative  
14 --

15 MR. SCHUMITSCH: It was just what we  
16 called alternative heat sync, yes. So what Peter  
17 asked us to do was go ahead and rerun our models.  
18 Just the model of record for the DCD PRA, the EFW PRA  
19 and with this other event. So we basically did four  
20 configurations.

21 So for the DCD we had a non-loss of  
22 preferred power event with the auxiliary heat sync in  
23 the normal configuration. And then a loss of  
24 preferred power event with DDHS in normal alignment.  
25 We compared those events with four FERMI 3 specific

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1 events. One non-loss of power event with the HS  
2 normal alignment and one non-loss of power event with  
3 -- loss of preferred power, I've got to be careful  
4 with this.

5 CHAIR CORRADINI: You're going to have to  
6 say these slower for me, I'm sorry.

7 MR. SCHUMITSCH: Okay. So the first --

8 CHAIR CORRADINI: So first of all you had  
9 two calculations, simulations from the original. One  
10 without preferred power, one with loss of preferred  
11 power.

12 MR. SCHUMITSCH: Right. Now we do four.  
13 Basically those two and then each one of those two  
14 align to the auxiliary heat sync and one aligned to  
15 the natural draft tower. So in all of the non-loss of  
16 preferred power it just bounded, there was really no  
17 change in what the valves do.

18 In the loss of preferred power events, as  
19 the member said, the valves have to change state. We  
20 have to close the valves that are starting to return  
21 to the natural draft tower and open the valves and let  
22 it go back to the fan in the basin.

23 The fans really are not relevant on all of  
24 our loss of preferred events the fans were always,  
25 they shut down when you lost preferred power. When

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1 the diesel started and the buses got re-energized  
2 there was always a start signal on those fans. So  
3 there's really no change in that.

4 So really the only thing that was changing  
5 is valve positions. So basically we did that  
6 analysis. So I've really gone through the first two  
7 bullets of this handout. And the last bullet was that  
8 even when we do these valves changing state the  
9 increases are not significant.

10 There was approximately a one percent  
11 change in the ESBWR CDC, which isn't significant. So  
12 I mean one percent of a  $10^{-8}$  plant we're talking  
13 somewhere out in the  $10^{-10}$ .

14 CHAIR CORRADINI: But can I say it back to  
15 you though, so I get right? So with a loss of  
16 preferred power, and with a failure of the switch to  
17 your alternative cooling, and staying in the normal  
18 cooling mode that adds to the CDF on this magnitude?

19 MR. SCHUMITSCH: Yes.

20 CHAIR CORRADINI: Okay. And this is base  
21 don the reliability of the valves given these  
22 conditions?

23 MR. SCHUMITSCH: These valves are already  
24 modeled in our model. There was a certain percentage  
25 of failure based on operator actions. It's actually

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1 a very conservative model, which it always assumes  
2 that one train has failed. I mean you start there and  
3 that what you probably, they kind of argue with me  
4 whether that's a realistic assumption. But it's a  
5 very conservative assumption.

6 But you start with one train failed and  
7 then using the probabilities of the valve not  
8 repositioning, that results in a one percent increase  
9 in CDF.

10 CHAIR CORRADINI: Okay.

11 MALE PARTICIPANT: At least I think I  
12 understand.

13 CHAIR CORRADINI: Other questions? All  
14 right. Anything else from GEH? Otherwise I think  
15 we're done. So let me go around and see if the  
16 subcommittee has any comments. Otherwise let me look  
17 at you guys and make sure, Jerry, the next set will be  
18 Chapter 2.

19 MR. HALE: We have four chapters  
20 remaining. Chapters 1, 2 and 3.

21 CHAIR CORRADINI: I was going to say 2 and  
22 3 are the big --

23 MR. HALE: Yes, and 14.

24 CHAIR CORRADINI: Oh, 14 is still  
25 remaining.

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1 MR. THOMAS: Chapter 10?

2 MR. HALE: Yes, and 10, I'm sorry.

3 CHAIR CORRADINI: But 2 and 3 are the ones  
4 that have, I'm going to use the wrong terminology, but  
5 differences from the DCD. There are some --

6 MR. HALE: Those are the ones that involve  
7 the backfill analysis. That's correct.

8 CHAIR CORRADINI: Right, which is  
9 different?

10 MR. HALE: Yes.

11 CHAIR CORRADINI: Okay.

12 DR. KRESS: Mike, I had a question I  
13 didn't get asked. On their one percent change?

14 MR. SCHUMITSCH: Yes, sir.

15 DR. KRESS: It actually went to core  
16 damage, but it's because of the low frequency that  
17 it's only this amount?

18 MR. SCHUMITSCH: No. The one percent is  
19 real. We multiply times the  $10^{-8}$ , changes out to the  
20  $10^{-11}$ . But yes the one percent has nothing to do with  
21 the actual ESBWR CDF.

22 DR. KRESS: But it has to do with the  
23 frequency of the valve?

24 MR. SCHUMITSCH: Yes.

25 DR. KRESS: That's the reason it's only

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1 this magnitude?

2 MR. SCHUMITSCH: Yes.

3 DR. KRESS: Thank you, that was my  
4 question.

5 MR. SCHUMITSCH: And again, just remember  
6 that the FPWR, everybody knows about all the passive  
7 cooling but we also have the air cooled and auxiliary  
8 diesels and the air cooled fire pumps. So again, if  
9 you don't have service water we've still got other air  
10 cooled means of moving water.

11 CHAIR CORRADINI: Do you have any  
12 comments, Tom?

13 DR. KRESS: No.

14 CHAIR CORRADINI: All right. Well I'll  
15 thank everybody. We finished a bit early. And we  
16 will see all of you back sometime in 2012. When is  
17 still to be determined. So please, for the Committee,  
18 let's remember all of this so we don't have to have  
19 them re-explain it. With that our subcommittee  
20 meeting is adjourned.

21 (Whereupon, the meeting in the above-  
22 mentioned matter was concluded at 1:26 p.m.)

23

24

25



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**Fermi 3 COLA  
Presentation to ACRS Subcommittee  
Chapter 11**

# Chapter 11, Radioactive Waste Management: Chapter Topics



|      | <b>FSAR Section</b>                 | <b>Presenter</b> |
|------|-------------------------------------|------------------|
| 11.1 | Source Terms                        | IBR Section      |
| 11.2 | Liquid Waste Management             | N. Latzy         |
| 11.3 | Gaseous Waste Management            | N. Latzy         |
| 11.4 | Solid Waste Management              | N. Latzy         |
| 11.5 | Process Radiation Monitoring System | N. Latzy         |

# Chapter 11, Radioactive Waste Management: Supplemental Information



## 11.2 Liquid Waste Management System

EF3 SUP Describes cost benefit analysis for liquid waste management system

- Analysis is based on population dose estimates due to liquid effluents described in FSAR Chapter 12.
- Population dose in FSAR Chapter 12 assumes liquid effluents during normal operation even though ESBWR is designed as a zero liquid effluent discharge plant.
- Uses cost parameters from RG 1.110, Appendix A, without exception.
- Conservatively assumes that each potential augment is 100% effective.
- No additional augments were identified.

# Chapter 11, Radioactive Waste Management: Supplemental Information



## 11.2 Liquid Waste Management System

- STD COL Describes design and procedures to preclude non-radioactive systems from becoming contaminated.
- STD COL References design and procedures that minimize contamination of facilities and environment.
- EF3 SUP Describes design provisions for the Circulating Water Blowdown line to preclude an unmonitored release of radioactivity to the groundwater.

# Chapter 11, Radioactive Waste Management: Supplemental Information



## 11.3 Gaseous Waste Management System

EF3 SUP Describes cost benefit analysis for gaseous waste management system.

- Analysis is based on population dose estimates due to gaseous effluents described in FSAR Chapter 12.
- Uses cost parameters from RG 1.110, Appendix A, without exception.
- No additional augments were identified.

# Chapter 11, Radioactive Waste Management: Supplemental Information



## 11.4 Solid Waste Management System

### EF3 DEP Radwaste Building Reconfigured to Increase Storage Capacity for Class B and C Waste.

- Departure from the standard design in the DCD.
- Departure affects structure, system and component descriptions in Chapters 1, 9A, 11, and 12.
- Departure describes impacts to the Radwaste Building, including waste storage provisions, waste storage component capacities, waste volumes, evaluations for shielding, impacts to occupational exposure, radiation zones and access routes.

# Chapter 11, Radioactive Waste Management: Supplemental Information



## 11.4 Solid Waste Management System

- STD SUP Solid waste cost benefit analysis is addressed by the liquid effluent and gaseous effluent cost benefit analyses.
- STD COL Specifies testing and programs to comply with regulatory guidance (RG 1.143 and RG 8.8).
- STD COL Describes design and procedures that address IEB 80-10 (prevention of cross-contamination of non-radioactive systems).
- STD COL Incorporates by reference NEI 07-10A, "Generic FSAR Template Guidance for Process Control Program," for development of the Process Control Program.

# Chapter 11, Radioactive Waste Management: Supplemental Information



## 11.5 Process Radiation Monitoring System

STD COL Provides description of Offsite Dose Calculation Manual (ODCM). Incorporates by reference NEI 07-09A, “Template Guidance for Offsite Dose Calculation Manual Program Description.”

ODCM includes:

- Methodology and Parameters used to calculate offsite dose.
- Program for process and effluent monitoring and sampling.
- Addresses lower limits of detection and sensitivities for effluent monitors.
- Provisions for sampling, including frequencies.



# **Presentation to the ACRS Subcommittee**

## **Fermi Unit 3 COL Application Review**

### **SER Chapter 11 with No Open Items “Radioactive Waste Management”**

**November 30, 2011**



## Staff Review Team

- **Project Managers**
  - Adrian Muniz, Lead PM, DNRL/BWR
  - Raj Anand, Chapter PM, DNRL/BWR
- **Technical Staff**
  - George Cicotte, Sr. Health Physicist, DCIP/CHPB
  - Edward Roach, Chief, DCIP/CHPB

## Summary of Technical Discussion Points for Fermi 3 COL Chapter 11

| FSAR Section                             | Summary of Supplemental Information |
|--|-------------------------------------|
| 11.1 Source Terms                        | G. Cicotte (IBR Section)            |
| 11.2 Liquid Waste Management System      | G. Cicotte (Site-Specific)          |
| 11.3 Gaseous Waste Management System     | G. Cicotte (Site-Specific)          |
| 11.4 Solid Waste Management System       | G. Cicotte (Site-Specific)          |
| 11.5 Process Radiation Monitoring System | G. Cicotte (Site-Specific)          |



## Regulations and Review Guidance

- Regulatory Guide 1.206
- 10 CFR 52.79(d)(1)
  - may reference design certification and update to reflect site/design specific parameters and features
- 10 CFR 52.79(a)(17)
- 10 CFR Part 20 – TMI Requirement
- NUREG-0800 Section 11.0 (SRP)

# Standard, Site-Specific, and Supplementary Information Summary

| Sec  | COL/Sup Item            | Description   |
|------|-------------------------|---|
| 11.2 | STD COL 11.2-1-A        | Implementation of IE Bulletin 80-10                                     |
|      | <b>STD COL 11.2-2-A</b> | <b>Implementation of 10 CFR 20.1406</b>                                 |
|      | <b>EF3 SUP 11.2-1</b>   | <b>Section II.D, App I, Part 50, Cost-Benefit Analysis (CBA) liquid</b> |
|      | <b>EF3 SUP 11.2-2</b>   | <b>Groundwater Protection, 10 CFR 20.1406</b>                           |
| 11.3 | <b>EF3 SUP 11.3-1</b>   | <b>Section II.D, App I, Part 50 CBA gaseous</b>                         |
| 11.4 | <b>EF3 DEP 11.4-1</b>   | <b>Long-Term Temporary Radwaste Storage, Class B/C</b>                  |
|      | STD COL 11.4-1-A        | Regulatory Guides 1.143, 8.8 (ALARA)                                    |
|      | STD COL 11.4-2-A        | Implementation of IE Bulletin 80-10                                     |

## Standard, Site-Specific, and Supplementary Information Summary (continued)

| Sect | COL/Sup Item            | Description  |
|------|-------------------------|--|
|      | STD COL 11.4-3-A        | Process Control Program                            |
| 11.4 | STD COL 11.4-4-A        | Temporary Storage Facility                         |
|      | STD COL 11.4-5-A        | Compliance with 10 CFR 20.1406                     |
|      | EF3 SUP 11.4-1          | Section II.D, App I, Part 50 CBA solid             |
| 11.5 | STD COL 11.5-1-A        | Subsystem Sensitivities, Lower Limits of Detection |
|      | <b>STD COL 11.5-2-A</b> | <b>Offsite Dose Calculation Manual</b>             |
|      | STD COL 11.5-3-A        | Process / Effluent Monitoring & Sampling           |
|      | STD COL 11.5-4-A        | Site-Specific Offsite Dose Calculations            |
|      | STD COL 11.5-5-A        | Instrument Sensitivity Derivations for ODCM        |



## Site-Specific Review Issues

- **Compliance with 10 CFR 20.1406:**
  - STD COL 11.2-2-A and 11.4-5-A: Compliance discussed in SER Section 12.3.
- **Implementation of Section II.D of Appendix I to Part 50:**
  - EF3 SUP 11.2-1 and 11.3-1: Augments not cost-beneficial.

## Site-Specific Review Issues

- **EFS DEP 11.4-1, Long-Term Radwaste Storage:**
  - Initial Departure included Tier 1 changes, later amended to Tier 2 only, not requiring prior NRC approval
  - Internal Radwaste Building reconfiguration to accommodate 10 years of Class B and C wastes, and 3 months of Class A wastes.
- **STD COL 11.5-2-A: Dose objectives of 10 CFR 50, Appendix I**
  - Child thyroid dose limiting
  - Proposed achieving objective through alternative methodology – operational limitations in ODCM



## **Site-Specific Review Issues**

- **Correction in DCD condensate purification system (CPS) FSAR Chapter 10:**
  - Discussed further in Section 12.2
  - DCD routine source term revised (Section 11.1), with corresponding increase in effluents and calculated offsite doses.
  - Applicant proposed alternative methodology to achieve dose objectives via ODCM limiting operational configuration.
  - Divert open feedwater flow back to main condenser instead of downstream of CPS, resulting in purification of 100% feedwater flow.



# **SER with No Open Items**

## **Chapter 11.0**

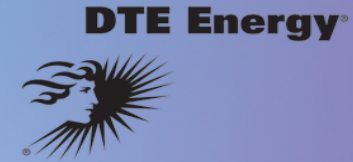
# **Questions/Comments**

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**Fermi 3 COLA  
Presentation to ACRS Subcommittee  
Chapter 12**

# Chapter 12, Radiation Protection: Chapter Topics



|      | <b>FSAR Section</b>                            | <b>Presenter</b> |
|------|--|------------------|
| 12.1 | Ensuring that Occupational Exposures are ALARA | M. Brandon       |
| 12.2 | Plant Sources                                  | M. Brandon       |
| 12.3 | Radiation Protection                           | M. Brandon       |
| 12.4 | Dose Assessment                                | M. Brandon       |
| 12.5 | Operational Radiation Protection Program       | M. Brandon       |
| 12A  | Calculation of Airborne Radionuclides          | IBR Section      |
| 12B  | Calculation of Airborne Releases               | IBR Section      |
| 12AA | ALARA Program                                  | M. Brandon       |
| 12BB | Radiation Protection                           | M. Brandon       |

# Chapter 12, Radiation Protection: Supplemental Information



## 12.1 Ensuring that Occupational Radiation Exposures are ALARA

STD SUP Provides description of the ALARA program.

STD COL Complies with RGs 1.8, 8.8, and 8.10.

Incorporates approved templates by reference NEI 07-03A, “Generic FSAR Template Guidance for Radiation Protection,” and 07-08A, “Generic FSAR Template Guidance for Ensuring that Occupational Exposures are as Low as Reasonably Achievable (ALARA).”

## 12.2 Plant Sources

STD COL Identifies contained sources, not part of the permanent plant design, and the associated controls.

- Calibration Sources
- Check Sources
- Radiography

## 12.2 Airborne Effluents and Doses Offsite

- EF3 COL Evaluates annual airborne effluents and annual offsite doses due to airborne effluents during normal operations.
- Long Term dispersion and deposition factors are provided in FSAR Section 2.3.5. Several long term dispersion and deposition factors are greater than the corresponding values in the DCD.
  - The reactor water operational iodine limits were reduced to accommodate the site specific long term dispersion and deposition factors.
  - Calculated dose to maximum exposed individual complies with 10 CFR 50 Appendix I.
  - Calculated radionuclide concentrations at site boundary comply with 10 CFR 20 Appendix B.

# Chapter 12, Radiation Protection: Supplemental Information



## 12.2 Liquid Effluents and Doses Offsite

EF3 COL Evaluates annual liquid effluents and annual offsite doses due to postulated liquid effluents during normal operations.

- Conservative analysis as ESBWR is designed for recycle of liquid radwaste (i.e., zero discharge).
- Calculated dose to maximum exposed individual complies with 10 CFR 50 Appendix I.
- Calculated radionuclide concentrations at site boundary comply with 10 CFR 20 Appendix B.



# Chapter 12, Radiation Protection: Supplemental Information



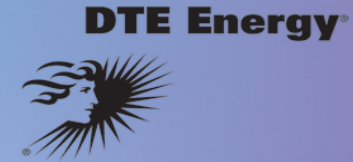
## 12.2 Compliance with 10 CFR 20.1301 and 20.1302

EF3 COL Offsite doses to members of the public are less than the limits in 10 CFR 20.1301.

EF3 COL Offsite doses to members of the public from the total Fermi site dose are less than the limits in 40 CFR 190.

EF3 COL Compliance with 10 CFR 20.1302 is demonstrated by showing that dose limits in 10 CFR 20.1301 are not exceeded by performing radiation surveys and through calculations.

# Chapter 12, Radiation Protection: Supplemental Information



## 12.3 Radiation Protection

### EF3 DEP Radwaste Building Reconfigured to Increase Storage Capacity.

- Departure is discussed in more detail as part of Chapter 11 presentation.
- Shielding in Radwaste Building confirmed to be adequate for building configuration.
- Radiation Zones were maintained consistent with the DCD.
- Access and Egress Routes were adjusted to reflect changes to the Radwaste Building floor plan.

## 12.3 Minimization of Contamination and Waste Generation

STD COL Programs and procedures are implemented to comply with 10 CFR 20.1406 and RG 4.21.

- Incorporates by reference NEI 08-08A, “Generic FSAR Template Guidance for Life Cycle Minimization of Contamination.”
- Describes Operational Programs that are implemented to meet 10 CFR 20.1406.

## 12.4 Dose Assessment

- EF3 SUP Evaluated annual dose from potential sources on-site to individual construction worker and collective doses to all construction workers.
- Individual construction worker dose is less than the limits in 10 CFR 20.1301 and 40 CFR 190.

# Chapter 12, Radiation Protection: Supplemental Information



## 12.5 Operational Radiation Protection Program

STD COL Describes Operational Radiation Protection Program.

- Appendix 12AA describes the ALARA program. Incorporates approved NEI 07-08A by reference.
- Appendix 12BB describes the Radiation Protection program. Incorporates approved NEI 07-03A by reference.
- Appendix 12BB includes a description of access controls for Very High Radiation Areas (VHRA).

# **Presentation to the ACRS Subcommittee**

## **Fermi Unit 3 COL Application Review**

### **SER Chapter 12 with No Open Items “Radiation Protection”**

**November 30, 2011**

## Staff Review Team

### Project Managers

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**Raj Anand, Chapter PM, DNRL/BWR**

### Technical Staff

**Charles Hinson, Sr. Health Physicist, DCIP/CHPB**

**George Cicotte, Sr. Health Physicist, DCIP/CHPB**

**Edward Roach, Chief, DCIP/CHPB**

## **Regulations and Review Guidance**

10 CFR Part 20, and Appendix B to Part 20

10 CFR 50.34(f), 50.34a, 50.36a, and Appendix I to Part 50

40 CFR Part 190, implemented under Part 20.1301(e)

10 CFR 20.1406

NUREG-0800, Section 12 (SRP)

Regulatory Guide 1.206



# Fermi 3 COL Chapter 12 FSAR Sections Reviewed

| FSAR Section  | Reviewer & Section Type                   |
|---|---|
| 12.1 Ensuring that Occupational Radiation Exposures are ALARA | C. Hinson (Standard)                      |
| 12.2 Plant Sources  | C. Hinson & G. Cicotte<br>(Site-Specific) |
| 12.3 Radiation Protection                                     | C. Hinson (Site-Specific)                 |
| 12.4 Dose Assessment  | C. Hinson (Site-Specific)                 |
| 12.5 Operational Radiation Protection Program                 | C. Hinson (Standard)                      |

## Listing of COL Items, Departures and Supplemental Information Items For Fermi 3 COL Chapter 12

| Sect | COL/Dep/Sup Item        | Description                                  |
|------|-------------------------|--|
| 12.1 | STD COL 12.1-1-A        | Follow guidance of RG 8.10                   |
|      | STD COL 12.1-2-A        | Follow guidance of RG 1.8                    |
|      | STD COL 12.1-3-A        | Operational considerations-ALARA program     |
|      | STD COL 12.1-4-A        | Follow guidance of RG 8.8                    |
| 12.2 | <b>EF3 COL 12.2-2-A</b> | <b>Airborne effluents and doses</b>          |
|      | <b>EF3 COL 12.2-3-A</b> | <b>Liquid effluents and doses</b>            |
|      | STD COL 12.2-4-A        | Other contained sources                      |
| 12.3 | <b>EF3 DEP 11.4-1</b>   | <b>Long-Term Radwaste Storage</b>            |
|      | STD COL 12.3            | Operational considerations-airborne monitors |
|      | <b>STD COL 12.3-4-A</b> | <b>Compliance with 10 CFR 20.1406</b>        |

## Listing of COL Items, Departures and Supplemental Information Items For Fermi 3 COL Chapter 12 (continued)

| Sect         | COL/Dep/Sup Item      | Description                                 |
|--------------|-----------------------|---|
| 12.4         | <b>EF3 SUP 12.4-1</b> | <b>Annual doses to construction workers</b> |
| 12.5         | STD COL 12.5-1-A      | Equipment, Instrumentation & Facilities     |
|              | STD COL 12.5-2-A      | Compliance w/50.34(f)(2)(xxvii)-I sampling  |
|              | STD COL 12.5-3-A      | Radiation Protection Program                |
|              | STD COL 12.1-4-A      | Follow guidance of RG 8.8                   |
|              |                       |   |
| App.<br>12AA | STD SUP 12.1-1        | ALARA Program                               |
| App.<br>12BB | STD COL (various)     | Radiation Protection Program                |

## **Section 12.2-Plant Sources: Airborne and Liquid Releases Offsite and Doses**

EF3 COL 12.2-2-A          Airborne Effluent and Doses  
EF3 COL 12.2-2-A          Liquid Effluent and Doses

- The applicant proposes to limit the reactor water operational iodine radioisotope concentrations in the ODCM, to comply with organ dose objectives of 10 CFR Part 50, Appendix I.
- The operational limitations on iodine concentration to be included in the ODCM is consistent with flexibility as described in 10 CFR 50, App. I.
- The offsite doses to members of the public are less than the limits in 10 CFR 20.1301, 20.1302, 10 CFR Part 50 Appendix I, and 40 CFR Part 190.

## Section 12.3-Radiation Protection

### Staff's review of EF3 DEP 11.4-1:

- EF3 DEP 11.4-1: Long-Term Radwaste Storage
- RAIs 12.3/4-7,9: Describe the Radwaste Building reconfiguration and any resulting changes in source terms or area dose rates
- Applicant's responses (October 19, 2010 & March 21, 2011)
  - FSAR modified to include reconfigured Radwaste Building layout drawings and tables showing Radwaste Building shielding geometry
  - Staff compared the revised figures and tables against those in the ESBWR DCD and found the changes acceptable
  - No changes made to equipment source terms or area dose rates
  - In accordance with RG 8.8, process and drain piping from rooms containing high activity will be routed to minimize personnel exposures

## **Section 12.3-Radiation Protection**

### **Staff's review of STD COL 12.3-4-A:**

- STD COL 12.3-4-A: Compliance with 10 CFR 20.1406
- RAI 12.3/4-6: Describe the discharge blowdown line features that minimize the potential for unmonitored and uncontrolled releases to the environment
- Applicant's responses (Oct. 19, 2010 & August 1 & 24, 2011)
  - Blowdown line is a buried 48" HDPE seamless pipe with no valves, vacuum breakers, or other inline components
  - Radwaste discharge line is enclosed within a guard pipe
  - A groundwater monitoring program, which includes the utilization of groundwater wells, will be developed consistent with NEI 08-08A
  - NEI 08-08A addresses the guidance of RG 4.21 and requirements of 10 CFR 20.1406

## **Section 12.4-Dose Assessment**

### **Staff's review of EF3 SUP 12.4-1:**

- EF3 SUP 12.4-1: Annual Doses to Construction Workers
- RAIs 12.3/4-1,3,5: Provide the bases and assumptions used to calculate the construction worker dose estimates
- Applicant's response (May 21, 2010)
  - FSAR modified to include a description of the estimated contributions to construction worker doses from direct radiation and gaseous effluents
  - Direct radiation sources include exposure from Fermi 2, the Fermi 2 ISFSI, and the decommissioned Fermi 1 site
  - Annual dose to a construction worker is below 10 CFR 20.1301 limits

# **SER with No Open Items**

## **Chapter 12.0**

# **Questions/Comments**



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**Fermi 3 COLA  
Presentation to ACRS Subcommittee  
Chapter 13**

# Chapter 13, Conduct of Operations: Chapter Topics



|      | <b>FSAR Section</b>                   | <b>Presenter</b> |
|------|---------------------------------------|------------------|
| 13.1 | Organizational Structure of Applicant | P. Smith         |
| 13.2 | Training                              | P. Smith         |
| 13.4 | Operational Program Implementation    | P. Smith         |
| 13.5 | Plant Procedures                      | P. Smith         |
| 13.7 | Fitness for Duty                      | P. Smith         |
| 13.8 | Cyber Security (Per SER)              | P. Smith         |
| 13.3 | Emergency Planning                    | P. Smith         |

# Chapter 13, Conduct of Operations: Supplemental Information



## 13.1 Organizational Structure of Applicant

EF3 COL Describes Fermi 3 organizational structure.

Design and construction organization and responsibilities are described in Appendix 13AA.

## 13.2 Training

STD COL Provides Description of Training Program.

Appendix 13BB incorporates by reference NEI 06-13A, "Template for an Industry Training Program Description," for the Training Program.

# Chapter 13, Conduct of Operations: Supplemental Information



## 13.4 Operational Program Implementation

STD COL Provides operational program implementation milestones.

## 13.5 Plant Procedures

STD SUP Describes administrative and operating procedures (including abnormal and emergency procedures).  
Describes procedure development program.  
Describes procedure implementation plan.

# Chapter 13, Conduct of Operations: Supplemental Information



## 13.7 Fitness for Duty (FFD)

STD SUP Commits to NEI 06-06, Revision 5, “Fitness for Duty Program for New Nuclear Power Plant Construction Sites.”

Meets 10 CFR Part 26.

Milestones for implementation established in Section 13.4 for different categories of personnel.

# Chapter 13, Conduct of Operations: Supplemental Information



## 13.8 Cyber Security

- Cyber Security Plan (CSP) developed consistent with NEI 08-09, Revision 6, “Cyber Security Plan for Nuclear Power Reactors.”
- CSP describes the site defensive model.
- CSP satisfies the requirements of 10 CFR 73.54.
- Milestones for implementation are established in Section 13.4.

# Chapter 13, Conduct of Operations: Supplemental Information



## 13.3 Emergency Planning

- Emergency Plan Design
- Emergency Facilities
- Emergency Response
- Emergency Planning Zone
- Evacuation Time Estimate
- Offsite Education and Alerting

# Chapter 13, Conduct of Operations: Supplemental Information



## Emergency Plan Design

- Separate Plan for Fermi 3, Emergency Response Actions are coordinated with Fermi 2. Same EPZ for both units.
- Developed in accordance with:
  - 10 CFR 50.47
  - 10 CFR Appendix E
  - NUREG-0654/FEMA-REP-1
- Emergency Action Levels (EALs) will be developed in accordance with NEI 07-01, “Methodology for Development of Emergency Action Levels, Advanced Passive Light Water Reactors.”



# Chapter 13, Conduct of Operations: Supplemental Information



## Emergency Facilities

- Control Room
- TSC; Location specified in DCD (Electrical Building)
- OSC; Location specified in DCD (Service Building)
- EOF; Serves both Fermi 2 and Fermi 3 (Onsite Nuclear Operations Center)
- Alternate EOF; Approximately 22 miles from Site (Western Wayne Center)
- Joint Information Center (JIC) – Monroe County Community College (Approximately 12 miles from Site)
- Communications are described in Emergency Plan

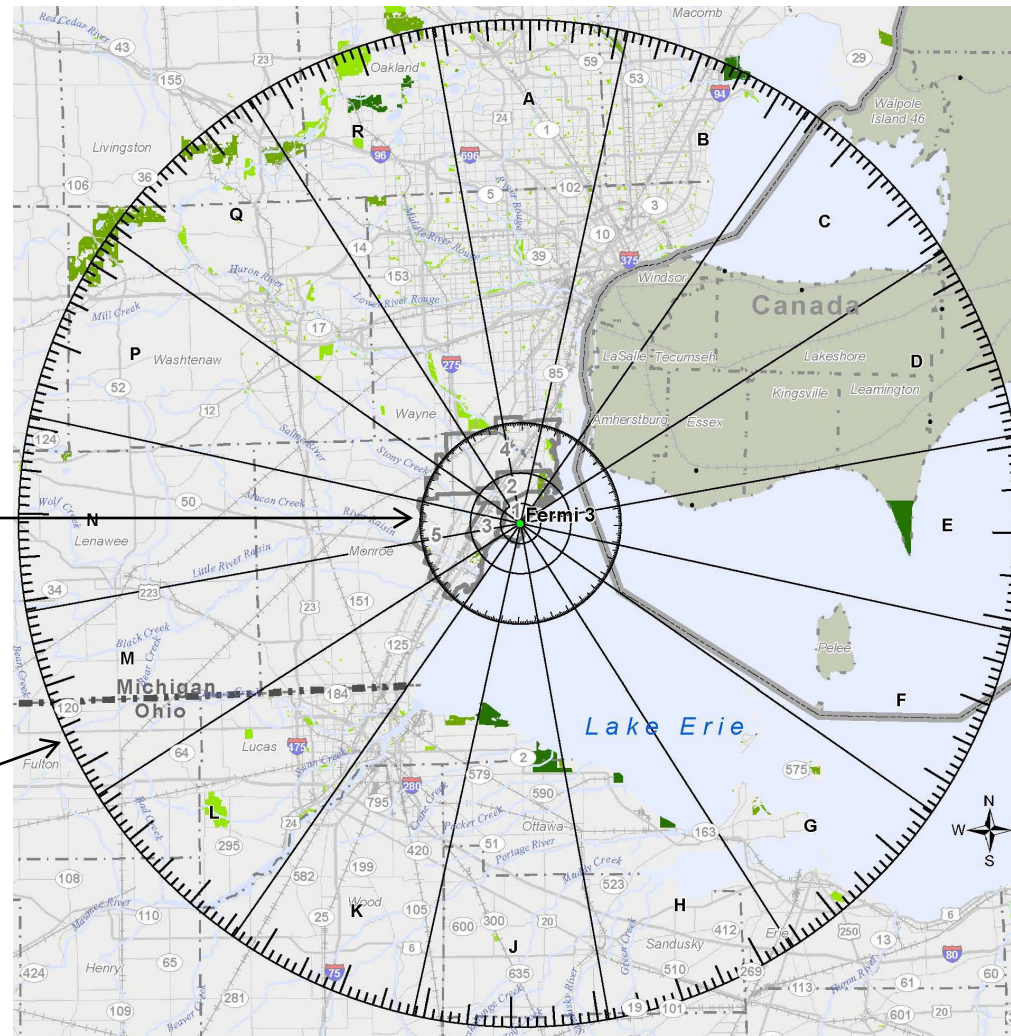
# Chapter 13, Conduct of Operations: Supplemental Information



## Emergency Planning Zones

Plume  
Exposure  
Pathway  
(10 mile radius)

Ingestion  
Exposure  
Pathway  
(50 mile radius)



# Chapter 13, Conduct of Operations: Supplemental Information



## Emergency Response

- Control Room - Operational Control of the Plant.
- TSC - Manages resources to support Control Room.
- OSC - Provides manpower and support to Control Room and TSC for in-plant functions.
- EOF - Directs Emergency Response Organization and Coordinates with Offsite Agencies.
- JIC - Coordinates dissemination of information to media and public.

# Chapter 13, Conduct of Operations: Supplemental Information



## Emergency Response - Outside Agencies

- State of Michigan
  - Emergency Operations Center
  - Emergency Management Division
  - Department of Environmental Quality
  - Department of Community Health
- Local Government
  - Monroe County
  - Wayne County
- Federal Government
  - NRC
  - FEMA
- Province of Ontario

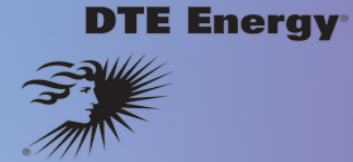
# Chapter 13, Conduct of Operations: Supplemental Information



## Evacuation Time Estimate (ETE)

- Fermi 3 specific ETE performed for COLA (updated August 2010).
- Complies with NUREG-0654/FEMA-REP-1 and NUREG/CR-6863.
- Considered 14 scenarios (time of day, day of week, season, weather) and 7 regions (based on wind direction and wind strength).
- Considered impact on evacuation time of Fermi 3 construction workers during an accident at Fermi 2.
- Utilized in the development of Emergency Plans.
- Provides information to Licensee and State and Local Governments needed for protective action decision making.

# Chapter 13, Conduct of Operations: Supplemental Information

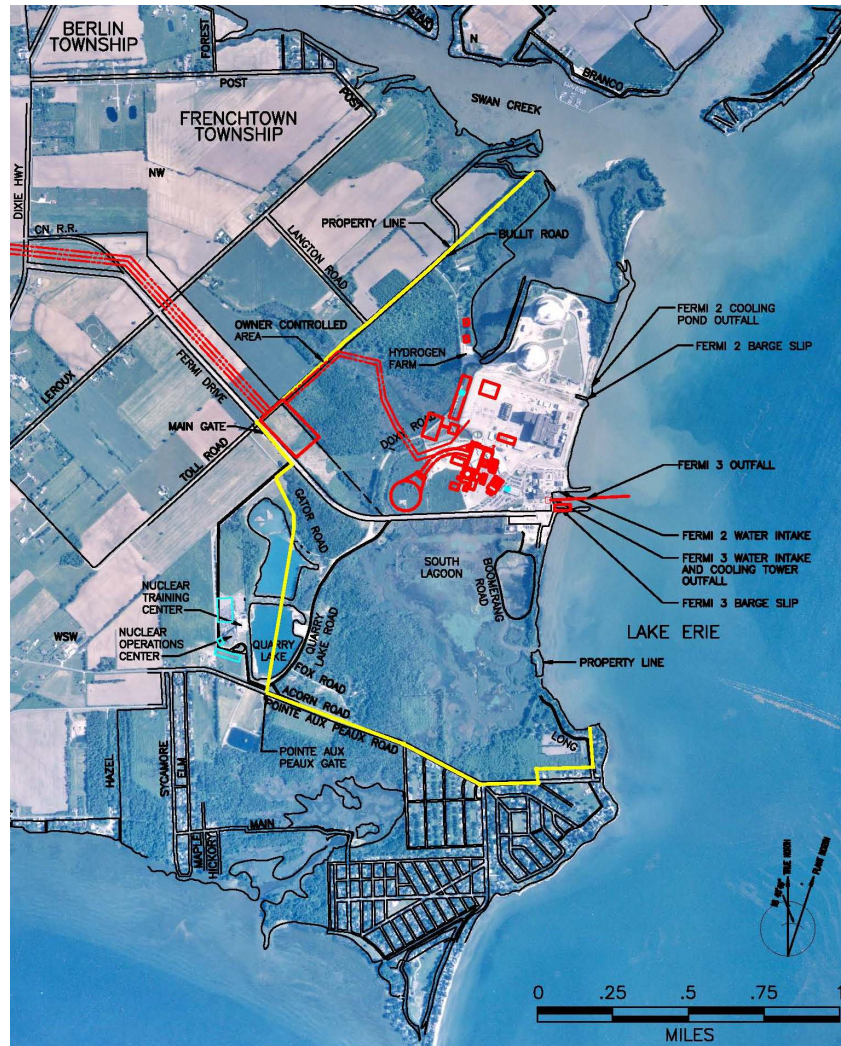
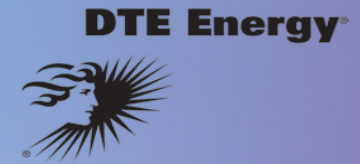


## Post-COL Activities

- Milestones, License Conditions
  - Full participation exercise.
  - Onsite exercise.
  - Detailed implementing procedures submitted to NRC.
  - Fully developed set of EALs.
- ITAAC
  - Address elements of emergency preparedness that cannot be completed during COL application stage.



# Chapter 13, Conduct of Operations: Supplemental Information – Back-up Information





# **Presentation to the ACRS Subcommittee**

## **Fermi Unit 3 COL Application Review**

### **SER Chapter 13 with No Open Items “Conduct of Operations”**

November 30, 2011





# Summary of Technical Discussion for Fermi 3 COL Chapter 13

| FSAR Section |  | Summary of Supplemental Information |
|--------------|--|-------------------------------------|
| 13.1         | Organizational Structure of Applicant        | Richard Pelton                      |
| 13.2.1       | Reactor Operating Training                   | Richard Pelton                      |
| 13.2.2       | Non-Licensed Operator Training               |                                     |
| 13.5.1.1     | Administrative Procedures                    | Richard Pelton                      |
| 13.5.2.1     | Operating and Emergency Operating Procedures |                                     |
| 13.3         | Emergency Planning                           | Eric Schrader                       |
| 13.4         | Operational Program Implementation           | Jerry Hale                          |
| 13.7         | Fitness for Duty                             | Wayne Chalk                         |
| 13.8         | Cyber Security                               | Perry Pederson                      |

## **Section 13.1 – Organizational Structure of Applicant**

- **Staff’s Review of COL & Supplemental Items:**
  - EF3 COL 13.1-1-A, “Management and Technical Support Organization,” requires the applicant to describe the management, technical support, and operating organizations.
  - EF3 COL 9.5.1-10-A, “Fire Brigade,” requires the applicant to provide a milestone for implementing manual firefighting.
- **Staff Conclusion:**
  - The staff’s review confirmed that the applicant has addressed EF3 COL Item 13.1 1-A, EF3 COL Item 9.5.1-10-A, and no outstanding information is expected to be addressed in the Fermi 3 COL FSAR related to this section.
  - The staff has determined that the applicant has provided sufficient information for satisfying the requirements of 10 CFR 50.40(b) and 10 CFR 50.54(j–m).

## Section 13.2 - Training

- **Staff's Review of COL & Supplemental Items:**
  - STD COL 13.2-1-A, "Reactor Operator Training," requires the applicant to provide a description of, and the schedule for, the training program for reactor operators and senior reactor operators, and the licensed operator requalification program.
  - STD COL 13.2.2-A, "Training for Non-Licensed Plant Staff," requires the applicant to provide a description of, and the schedule for, the training program for non-licensed plant staff.
  - STD SUP 13.2-1, "Training," requires the applicant to provide a description of, and the schedule for implementation of the training program
- **Staff Conclusion:**
  - The staff's review confirmed that the applicant has addressed STD COL 13.2-1-A, STF COL 13.2-2-A, STD SUP 13.2-1, and no outstanding information is expected to be addressed in the Fermi 3 COL FSAR related to this section.
  - The staff has determined that the applicant has addressed COL Items STD COL 13.2-1-A and 13.2-2-A and STD SUP 13.2-1, provided sufficient information for satisfying the requirements of 10 CFR 50.54(i), 10 CFR 50.120, 10 CFR 52.79(a)(33) and (34), 10 CFR 55.13, 55.31, 55.41, 55.43, 55.45, and 55.59, and is acceptable.

## **Section 13.3 – Emergency Planning**

### **■ Regulations**

- 10 CFR 52.79(a)(21) compliance with 10 CFR Part 50.47 and Appendix E
- 10 CFR 50.33(g) – State and local emergency plans and EPZ
- 10 CFR 50.47(a)(1)(ii) – Reasonable assurance finding
- 10 CFR 50.47(a)(2) – FEMA offsite finding, NRC onsite finding
- 10 CFR 50.47(b) – 16 Planning Standards
- Appendix E to 10 CFR Part 50

### **■ Guidance**

- Regulatory Guide 1.101 – EP for Nuclear Power Reactors
- NUREG-0654 – Criteria for 16 planning standards
- NUREG-0396 / EPA 520/1-78-016 – Planning Basis
- NUREG-0800 SRP – Section 13.3 EP

## **Section 13.3 – Emergency Planning**

### **Emergency Plan & Supporting Information**

- TSC - Located in the PA in the Electrical Building, complies with ESBWR DCD described design requirements of location, size, habitability, and ventilation.
- OSC - Located in the Service Building within the PA, separate from the Control Room and provides an area for coordination of ERO personnel to support emergency response operations.
- Emergency Operations Facility – Share existing approved Unit 2 EOF.

## **Section 13.3 – Emergency Planning**

### **Post COL Items, License Conditions, Open Items & Confirmatory Items**

- Post-COL Activities
  - EP ITAAC
  - EP Implementation Milestones
  - Emergency Action Levels (NEI 07-01)
  - Finalized Letters of Agreement
- No Open Items
- 10 Confirmatory Items

## **Section 13.3 – Emergency Planning**

- **Conclusions**
  - Reasonable assurance exists for the offsite plans
  - DTE COL application includes post-COL activities, including EP ITAAC necessary to provide reasonable assurance for onsite plans
  - With the additional information and proposed textual revisions provided in response to the staff's requests for additional information, the NRC staff finds that the applicant addressed the required information relating to EP.

# Section 13.4 – Operational Program Implementation



- **Staff's Review of COL & Supplemental Items:**
  - **COL Item 13.4-1-A Operational Programs**
  - **COL Item 13.4-2-A Implementation Milestones**
  - **Post Combined License Activity:**
    - Implementation of each operational program will be evaluated by the staff according to the respective implementation milestone identified in FSAR Table 13.4-201.
  - **The applicant identified the following license conditions:**
    - No later than 12 months after issuance of the COL, applicant shall submit to the Director of NRO, or the Director's designee, a schedule for implementation of the operational programs listed in FSAR Table 13.4-201, including the associated estimated date for initial loading of fuel.
    - The schedule shall be updated every 6 months until 12 months before scheduled fuel loading, and every month thereafter until all the operational programs listed in FSAR Table 13.4-201 have been fully implemented.
- **Staff Conclusion: The applicant has adequately addressed COL and Supplemental information regarding Fermi 3 COL FSAR.**



# Section 13.5.1 - Administrative Procedures

- **Staff's Review of COL & Supplemental Items:**
  - STD SUP 13.5-1, Plant Procedure
  - STD COL 13.5-1-A, Administrative Procedures Development Plan
  - STD SUP 13.5-2, Procedure Control
  - STD SUP 13.5-3, Procedure Identification
  - STD SUP 13.5-4, Procedure Development
  - EF3 COL 13.5-4-A, Industry Guidance
  - STD SUP 13.5-5, Control of Procedure Format and Content
  - STD SUP 13.5-6, Procedure Detail
  - STD SUP 13.5-7, Procedure Development
  - STD SUP 13.5-8, Shutdown Management Procedures
  - STD SUP 13.5-9, Administrative Procedures for Activities that are Important to Safety

## **Section 13.5.1 - Administrative Procedures (continued)**

- **Staff's Review of COL & Supplemental Items:**
  - STD SUP 13.5-10, Administrative Procedures Described in ASME NQA-1
  - EF3 SUP 13.5-11, Procedure Control as Discussed in the QAPD
  - STD SUP 13.5-12, Procedure Style (Writer) Guide
  - STD SUP 13.5-13, Procedure for Maintenance and Control of Procedural Updates
  - STD SUP 13.5-14, Pre-COL Administrative Programs and Procedures
  - STD SUP 13.5-15, Administrative Procedures for Control of Operation Activities
  - STD SUP 13.5-16, Plant Administrative Procedures
  - The above items require the applicant to prepare plant procedures in accordance with established guidelines.

## **Section 13.5.1 - Administrative Procedures (continued)**

### **■ Staff's Conclusion**

- The staff's review confirmed that the applicant has addressed COL items STD COL 13.5-1-A and EF3 COL 13.5-4-A, and supplemental items STD SUP 13.5-1 through STD SUP 13.5-10, EF3 SUP 13.5-11, and STD SUP 13.5-12 through STD SUP 13.5-16, and that no outstanding information is expected to be addressed in the Fermi 3 COL FSAR related to this section.
- The staff has determined that the applicant has provided sufficient information for satisfying the requirements of 10 CFR 52.79(a)(14), (26), (29)(i), (29)(ii), (33), and (34).

## **Section 13.5.2 – Operating and Maintenance Procedures**

- **Staff's Review of COL & Supplemental Items:**
  - STD COL 13.5-1-A, Administrative Procedures Development Plan
  - STD COL 13.5-2-A, Plant Operating Procedures Development Plan
  - STD COL 13.5-3-A, Emergency Procedures Development
  - EF3 COL 13.5-4-A, Implementation of Plant Procedures Plan
  - STD COL 13.5-5-A, Procedures Included in Scope of Plan
  - STD COL 13.5-6-A, Procedures for Calibration, Inspection, and Testing
  - STD SUP 13.5-18, Classification of Procedures
  - STD SUP 13.5-19, System Operating Procedures
  - STD SUP 13.5-20, General Operating Procedures
  - STD SUP 13.5-21, Abnormal Operating Procedures
  - EF3 SUP 13.5-22, Emergency Operating Procedures

## **Section 13.5.2 – Operating and Maintenance Procedures (continued)**

- **Staff's Review of COL & Supplemental Items:**
  - STD SUP 13.5-23, Alarm Response Procedures
  - EF3 SUP 13.5-24, Temporary Procedures
  - STD SUP 13.5-25, Fuel Handling Procedures
  - STD SUP 13.5-26, Maintenance and Other Operating Procedures
  - STD SUP 13.5-27, Plant Radiation Protection Procedures
  - STD SUP 13.5-28, Emergency Preparedness Procedures
  - STD SUP 13.5-29, Instrument Calibration and Test Procedures
  - STD SUP 13.5-30, Chemistry Procedures
  - STD SUP 13.5-31, Radioactive Waste Management Procedures
  - STD SUP 13.5-33, Inspection Procedures
  - STD SUP 13.5-34, Modification Procedures
  - STD SUP 13.5-35, Heavy Load Handling Procedures

## **Section 13.5.2 – Operating and Maintenance Procedures (continued)**

- **Staff’s Review of COL & Supplemental Items:**
  - STD SUP 13.5-36, Material Control Procedures
  - STD SUP 13.5-37, Security Procedures
  - STD SUP 13.5-38, Refueling and Outage Planning Procedures
  - STD SUP 13.5-40, Refueling Cavity Integrity Procedure
  - The above items require the applicant to prepare plant procedures in accordance with established guidelines.

## **Section 13.5.2 – Operating and Maintenance Procedures (continued)**

### **■ Staff Conclusion**

- The staff's review confirmed that the applicant has addressed COL items STD COL 13.5-1-A through STD COL 13.5-3-A, EF3 COL 13.5-4-A, STD COL 13.5-5-A, and STD COL 13.5-6-A, and supplemental items STD SUP 13.5-18 through STD SUP 13.5-21, EF3 SUP 13.5-22, STD SUP 13.5-23, EF3 SUP 13.5-24, STD SUP 13.5-25 through STD SUP 13.5-31, and STD SUP 13.5.33 through STD SUP 13.5-40, and that no outstanding information is expected to be addressed in the Fermi 3 COL FSAR related to this section.
- The staff has determined that the applicant has provided sufficient information for satisfying the requirements of 10 CFR 52.79(a)(14), (26), (29)(i), (29)(ii), (33), and (34).

## **Section 13.3 – Emergency Planning**

- Regulations
  - 10 CFR 52.79(a)(21) compliance with 10 CFR Part 50.47 and Appendix E
  - 10 CFR 50.33(g) – State and local emergency plans and EPZ
  - 10 CFR 50.47(a)(1)(ii) – Reasonable assurance finding
  - 10 CFR 50.47(a)(2) – FEMA offsite finding, NRC onsite finding
  - 10 CFR 50.47(b) – 16 Planning Standards
  - Appendix E to 10 CFR Part 50
- Guidance
  - Regulatory Guide 1.101 – EP for Nuclear Power Reactors
  - NUREG-0654 – Criteria for 16 planning standards
  - NUREG-0396 / EPA 520/1-78-016 – Planning Basis
  - NUREG-0800 SRP – Section 13.3 EP



## **Section 13.3 – Emergency Planning**

### **Emergency Plan & Supporting Information**

- TSC - Located in the PA in the Electrical Building, complies with ESBWR DCD described design requirements of location, size, habitability, and ventilation.
- OSC - Located in the Service Building within the PA, separate from the Control Room and provides an area for coordination of ERO personnel to support emergency response operations.
- Emergency Operations Facility – Share existing approved Unit 2 EOF.

## **Section 13.3 – Emergency Planning**

### **Post COL Items, License Conditions, Open Items & Confirmatory Items**

- Post-COL Activities
  - EP ITAAC
  - EP Implementation Milestones
  - Emergency Action Levels (NEI 07-01)
  - Finalized Letters of Agreement
- No Open Items
- 10 Confirmatory Items

## **Section 13.3 – Emergency Planning**

### **■ Conclusions**

- Reasonable assurance exists for the offsite plans
- DTE COL application includes post-COL activities, including EP ITAAC necessary to provide reasonable assurance for onsite plans
- With the additional information and proposed textual revisions provided in response to the staff's requests for additional information, the NRC staff finds that the applicant addressed the required information relating to EP.

## **Section 13.4 – Operational Program Implementation**

- **Staff’s Review of COL & Supplemental Items:**
  - **COL Item 13.4-1-A Operational Programs**
  - **COL Item 13.4-2-A Implementation Milestones**
  - **Post Combined License Activity:**
    - Implementation of each operational program will be evaluated by the staff according to the respective implementation milestone identified in FSAR Table 13.4-201.
  - **The applicant identified the following license conditions:**
    - No later than 12 months after issuance of the COL, applicant shall submit to the Director of NRO, or the Director’s designee, a schedule for implementation of the operational programs listed in FSAR Table 13.4-201, including the associated estimated date for initial loading of fuel.
    - The schedule shall be updated every 6 months until 12 months before scheduled fuel loading, and every month thereafter until all the operational programs listed in FSAR Table 13.4-201 have been fully implemented.
- **Staff Conclusion: The applicant has adequately addressed COL and Supplemental information regarding Fermi 3 COL FSAR.**

## **Section 13.7 – Fitness for Duty**

- **Fitness for Duty, Lead Technical Reviewer**
  - Wayne Chalk
  
- **Fitness for Duty, Senior Program Manager**
  - Paul Harris

# **Section 13.7 – Fitness for Duty**

- Overview
- Background Information
- Application Standards
- Technical Review
- Conclusion

# Section 13.7 – Fitness for Duty

## Background Information

- 10 CFR Part 26
  - Publication Date: March 31, 2008
  - Effective Date: April 30, 2008
  - Purpose
- Phases of the FFD Program
  - Operations
  - Construction

# Section 13.7 – Fitness for Duty

## Application Standards

- Acceptance Criteria
  - 10 CFR Part 26, FFD Program
  - 10 CFR 52.79(a)(44)
- **References**
  - NEI 06-06, Revision 5



# Section 13.7 – Fitness for Duty

## Technical Review

- Areas Covered
  - Adequacy of Construction Phase
  - Adequacy of Operations Phase
- Milestones
  - Table 13.4-201 Operational Programs Required by NRC Regulations
- No License Conditions

# **Section 13.7 – Fitness for Duty**

## **Conclusion**

### **Conclusions:**

- No Outstanding Information
- Fermi Unit 3 COL FSAR is Acceptable
- Conforms to Regulatory Requirements

## **Section 13.8 – Cyber Security**

- **Staff's Review of COL & Supplemental Items:**
  - COL Items

## **Section 13.8 – Cyber Security (cont)**

### **Regulatory Evaluation**

- The following NRC regulations include the relevant requirements for the CSP:
  - 10 CFR 73.54, Protection of Digital Computer and Communication Systems and Networks
  - 10 CFR 73.55(a)(1), 10 CFR 73.55(b)(8), and 10 CFR 73.55(m)
  - Appendix G, Reportable Safeguards Events, to 10 CFR Part 73, Physical Protection of Plants and Materials
- Detroit Edison (DTE) submitted the Fermi 3 CSP per 10 CFR 73.54
- Submission was found acceptable IAW LIC 109

## **Section 13.8 – Cyber Security (cont)**

### **Regulatory Evaluation**

- Cyber Security is an operational program
  - SECY 05-0197 policy: cyber security program deployment is not subject to ITAAC
  - NRC to conduct post-licensing inspections to confirm program implementation
- Commission clarified the scope of 10 CFR 73.54 to include SSCs in the balance of plant
  - Includes important to safety SSCs with potential to affect plant reactivity

## **Section 13.8 – Cyber Security (cont)**

### **Regulatory Guide (RG) 5.71 and NEI 08-09 Rev. 6**

- RG 5.71 is one way for licensees to meet the requirements of 10 CFR 73.54
- NRC staff found NEI 08-09 Revision 6 acceptable for use by licensees to meet the requirements of 10 CFR 73.54
- RG 5.71 and NEI 08-09 Revision 6 are comparable documents
- DTE submitted Fermi 3 CSP and it was reviewed against the corresponding sections in RG 5.71 and NEI 08-09 Revision 6
- Staff Conclusion:
  - The applicant has adequately addressed COL and Supplemental information regarding Fermi 3 COL FSAR

## Section 13.8 – Cyber Security (cont)

### Fermi 3 CSP Elements

|   |   |
|---|---|
| <b>Scope and Purpose</b>  | <b>Ongoing Monitoring and Assessment</b>  |
| <b>Analyzing Digital Computer Systems and Networks and Applying Cyber Security Controls</b> | <b>Modification of Digital Assets</b>   |
| <b>Cyber Security Assessment and Authorization</b>  | <b>Attack Mitigation and Incident Response</b>                                      |
| <b>Cyber Security Assessment Team</b>   | <b>Cyber Security Contingency Plan</b>  |
| <b>Identification of Critical Digital Assets</b>  | <b>Cyber Security Training and Awareness</b>  |
| <b>Examination of Cyber Security Practices</b>  | <b>Evaluate and Manage Cyber Risk</b>   |
| <b>Tabletop Reviews and Validation Testing</b>  | <b>Policies and Implementing Procedures</b>   |
| <b>Mitigation of Vulnerabilities and Application of Cyber Security Controls</b>             | <b>Roles and Responsibilities</b>   |
| <b>Incorporating the Cyber Security Program into the Physical Protection Program</b>        | <b>Cyber Security Program Review</b>  |
| <b>Cyber Security Controls</b>  | <b>Document Control and Records Retention and Handling – <i>Issued RAI 4920</i></b> |
| <b>Defense-in-Depth Protective Strategies</b>   | <b>Implementation Schedule</b>  |

# **SER with No Open Items**

## **Chapter 13**

# **Questions/Comments**

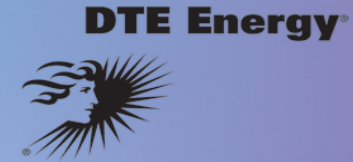


**DTE Energy<sup>®</sup>**



**Fermi 3 COLA  
Presentation to ACRS Subcommittee  
Chapter 9**

# Chapter 9, Auxiliary Systems: Chapter Topics



|     | <b>FSAR Section</b>  | <b>Presenter</b> |
|-----|--|------------------|
| 9.1 | Fuel Storage and Handling  | R. Pratt         |
| 9.2 | Water Systems  | R. Pratt         |
| 9.3 | Process Auxiliaries  | N. Latzy         |
| 9.4 | Heating, Ventilation, and Air Conditioning                         | IBR Section      |
| 9.5 | Other Auxiliary Systems  | N. Latzy         |
| 9A  | Fire Hazard Analysis (FHA)   | N. Latzy         |
| 9B  | Summary of Analysis Supporting Fire Protection Design Requirements | IBR Section      |

# Chapter 9, Auxiliary Systems: Supplemental Information



## 9.1 Fuel Storage and Handling

### STD COL Fuel Handling Operations:

- Commits to develop fuel handling procedures, including scope and milestones for completion.
- Describes requirements for testing and inspections plans for fuel handling equipment.

### STD COL Handling of Heavy Loads:

- Identifies requirements for heavy load and safe load path procedures.
- Describes requirements for testing and inspection of equipment.

# Chapter 9, Auxiliary Systems: Supplemental Information



## 9.2 Water Systems

### Plant Service Water System

- Classified as a RTNSS C system (consistent with DCD).
- Two independent redundant trains providing cooling water to the RCCWS and TCCWS heat exchangers.
- Rejects heat to either the normal power heat sink (NPHS) or the auxiliary heat sink (AHS). The NPHS uses a natural draft cooling tower and the AHS uses mechanical draft cooling towers.

## Chapter 9, Auxiliary Systems: Supplemental Information

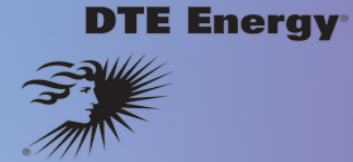


### Plant Service Water System (continued)

(EF3 COL Items)

- Carbon steel pipe is used for buried and above grade portions of PSWS.
- Corrosion protection system consistent with the guidance contained in ASME B31.1, Nonmandatory Appendix IV, is provided for the surfaces of the buried portion of PSWS.
- Basin storage capacity for 7 day heat removal without active makeup (confirmed by ITAAC).

# Chapter 9, Auxiliary Systems: Supplemental Information



## Makeup Water System

EF3 CDI Provides site specific information for the demineralization portion of the system.

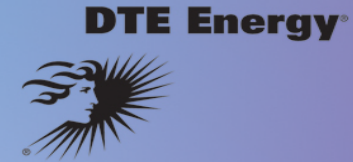
## Potable and Sanitary Water System

EF3 CDI Describes plant-specific systems, including the interface with the municipal water system.

## Ultimate Heat Sink (IC/PCCS Pools)

STD COL Commits to develop procedures for identifying and connecting makeup water sources to the UHS seven (7) days after an accident.

# Chapter 9, Auxiliary Systems: Supplemental Information



## Condensate Storage and Transfer System

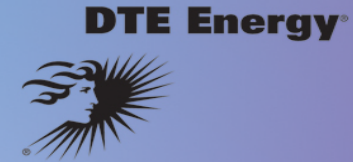
STD SUP Addresses freeze protection for the Condensate Storage and Transfer System.

## Station Water System

EF3 CDI Plant Cooling Tower Makeup Supply – makeup to PSWS and CIRC basins.

Pretreated Water Supply System – makeup to Fire Protection System.

# Chapter 9, Auxiliary Systems: Supplemental Information



## 9.3 Process Auxiliaries

### Process Sampling System

STD COL Describes Post-Accident Sampling Program.

Program meets requirements of NUREG-0800, Section 9.3.2, for actions in lieu of a Post Accident Sampling System.

### Hydrogen Water Chemistry System

EF3 CDI Used to inject hydrogen into the Feedwater System and oxygen into the Offgas System.

Describes hydrogen storage facility, relative location, and tank size.

STD CDI Describes inspection and test requirements.



# Chapter 9, Auxiliary Systems: Supplemental Information



## Hydrogen Water Chemistry System (continued)

### Follow-up for October 21<sup>st</sup> ACRS Meeting (Chapter 6)

- Storing and handling of hydrogen complies with EPRI NP-5283-SR-A, “Guidelines for Permanent BWR Hydrogen Water Chemistry Installations.”
- Hydrogen Storage in the Yard – Design Features
  - Distances and system design parameters (tank size, line size, operating parameters) are specified so that a tank or line rupture at the storage location will not have an adverse impact to safety related structures or air pathways into safety related structures.
  - Piping between storage location and Turbine Building is routed underground and, per EPRI NP-5283, shall be designed for cathodic protection (or coated and wrapped), for the appropriate soil conditions (such as frost depth and liquefaction), and for vehicle loads.
  - Excess flow check valve installed to limit a large release to the storage location. This design feature restricts the release to the Turbine Building in the event of a line break.
  - PRA assumes on-site storage facility follows EPRI NP-5283 and is considered to be low risk.

# Chapter 9, Auxiliary Systems: Supplemental Information

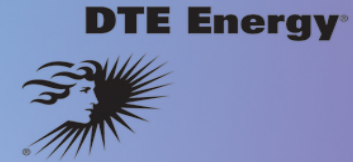


## Hydrogen Water Chemistry System (continued)

### Follow-up for October 21<sup>st</sup> ACRS Meeting (Chapter 6)

- Hydrogen Handling in the Turbine Building – Design Features
  - Per Regulatory Guide 1.189, “Fire Protection for Nuclear Power Plants,” and EPRI-NP-5283, excess flow protection is designed to ensure that a line break will not result in the hydrogen concentration exceeding 2 percent (i.e., 50% of the lower explosive limit) with or without normal ventilation operating.
  - Hydrogen monitors will be installed in the Turbine Building. Specific locations will be determined during detailed design. See DCD Figure 9.3-5 for simplified diagram.
  - Instrumentation indicates and/or alarms abnormal or undesirable conditions.
  - DCD provides requirements to isolate hydrogen supply if normal building ventilation is lost.
  - Commitment in FSAR Section 9.5 to perform a compliance review (prior to fuel load) to ensure that the Fire Hazards Analysis (FHA) reflects the final as-built design.
- In conclusion, hydrogen does not present a noxious gas concentration or combustion hazard.

# Chapter 9, Auxiliary Systems: Supplemental Information



## Oxygen Injection System

EF3 COL Provides a description of the oxygen storage facility.

## Zinc Injection System

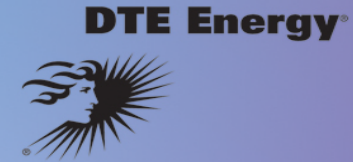
STD COL Zinc Injection System is not being utilized.

## 9.5 Other Auxiliary Systems

### Fire Protection System and Program (EF3 COL Items)

- Secondary firewater source is from Lake Erie.
- Specifies applicable codes, standards, and regulatory guidance.
- Describes control of combustible materials, hazardous materials, and ignition sources.
- Provides details on fire barriers and electrical raceway fire barrier systems.
- Specifies applicable quality assurance controls.
- Commitments associated with fire pump testing, fire barriers, manual smoke control, FHA compliance review of final as-built design, fire brigade, and quality assurance related procedures.

# Chapter 9, Auxiliary Systems: Supplemental Information



## Emergency Communication Systems

### EF3 COL Onsite and Offsite Emergency Communication Systems

- Emergency Notification System (ENS)
- Health Physics Network
- Emergency Response Data System
- Crisis Management Radio System
- Fire Brigade Radio System – complies with RG 1.189

### EF3 COL Transmission System Operator Communications

# Chapter 9, Auxiliary Systems: Supplemental Information



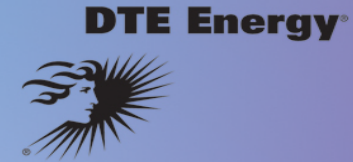
## Diesel Generator Fuel Oil Storage and Transfer System

- Standby Diesel Fuel Oil is classified as RTNSS C (consistent with DCD).
- Ancillary Diesel Fuel Oil is classified as RTNSS B (consistent with DCD).

STD COL Procedures ensure sufficient onsite inventory of fuel oil for 7 days of continuous operation.

EF3 COL Corrosion protection system used for underground fuel oil transfer piping.

# Chapter 9, Auxiliary Systems: Supplemental Information



## 9A Fire Hazards Analysis (FHA)

- Site specific information

### EF3 COL Yard Areas

- Hydrogen and Oxygen Storage
- Station Water Intake

EF3 DEP Radwaste Building reconfigured in support of departure in Chapter 11.

# **Presentation to the ACRS Subcommittee**

## **Fermi Unit 3 COL Application Review**

### **SER Chapter 9.0 with No Open Items “Auxiliary Systems”**

**November 30, 2011**



# Summary of Technical Discussion Points for Fermi 3 COL Chapter 9

| Discussion Topic                  | Presenter/Description   |
|-----------------------------------|---|
| Introduction                      | M. Eudy   |
| 9.2.1 Plant Service Water Systems | C. Li (Site Specific COL, SUP, CDI items)                     |
| 9.2.5 Ultimate Heat Sink          | C. Li (Post 7 Day Makeup to UHS and COM)                      |
| 9.5.1 Fire Protection System      | R. Vettori (Site-Specific COL and SUP items, Dep11.4-1, COMs) |
| 9.5.2 Communication Systems       | E. Eagle (Site-Specific )                                     |
| Conclusions/Questions             | M. Eudy   |

## **9.2.1 – Plant Service Water System**

### **Staff’s Review of COL, Supplemental and CDI Items:**

- **EF3 COL Item 9.2.1-1-A: Material Selection**

The COL applicant selected carbon steel that meets ASTM standards as PSWS pipe material and provided water treatment and corrosion protection system to preclude long-term corrosion and fouling.

- **EF3 SUP Item 9.2.1-1: Basin Reserve Storage Capacity**

A basin reserve storage capacity of 2.4 million gallons was established by determining the evaporation rate for the auxiliary heat sink (AHS) using the heat load of  $1.92 \times 10^{10}$  Btu over a 7 day period as defined in the DCD.

- **EF3 CDI System Description**

## 9.2.1 – Plant Service Water System

- **EF3 CDI Table 9.2-201, “PSWS Component Design Characteristics”**

The applicant provided plant-specific design information in Section 9.2.1.2 of EF3 FSAR to address the conceptual design information (CDI).

- **Interface Requirement**

The applicant provided plant-specific ITAAC to demonstrate that EF3 PSWS contains an inventory of cooling water sufficient for removing post 72-hour heat from the RCCWS for a period of seven days without active makeup supporting the post-72 hour RTNSS cooling function.

### **Staff’s Conclusions:**

The applicant has adequately addressed COL, supplemental information, CDI, and interface requirement in the Fermi 3 COL FSAR.

## **9.2.5 – Ultimate Heat Sink**

### **Staff’s Review of COL & Post COL Commitment:**

- **STD COL Item 9.2.5-1-A: Post 7 Day Makeup to UHS**

The applicant identified COM 9.2-001 as a commitment to address the post seven days makeup to UHS

- **Post Combined License Activity (COM 9.2-001):**

Procedures that identify and prioritize available makeup sources seven days after an accident, and provide instructions for establishing necessary conditions, will be developed in accordance with the procedure development milestone in Section 13.5

### **Staff’s Conclusions:**

The applicant has adequately addressed COL and the Commitment in the Fermi 3 COL FSAR.

## **9.5.1 - Fire Protection System**

### **Staff's Review of COL & Supplemental Items:**

- EF3 COL Item 9.5.1.1-A: Secondary Firewater Storage Source
- EF3 COL Item 9.5.1-2-A: Secondary Firewater Capacity
- EF3 COL Item 9.5.1-4-A: Piping and Instrumentation Diagrams
- EF3 COL Item 9.5.1-10-A: Fire Brigade
- EF3 COL Item 9A.7-1-A: Yard Fire Zone Drawings
- EF3 COL Item 9A.7-2-A: Detailed FHA of the Yard
- EF3 SUP 9.5.1-1 and EF3 SUP 9A-01 Codes and Standards

### **Staff's Review of Tier 2 Departure:**

- EF3 DEP 11.4-1: Long Term, Temporary Storage of Class B and C Low-Level Radioactive Waste

## **9.5.1 - Fire Protection System**

### **Staff's Review of Post COL Commitments:**

- COM 9.5-001: Fire Pumps
- COM 9.5-002: Fire Barriers
- COM 9.5-003: Manual Smoke Control
- COM 9.5-004: Fire Hazard Analysis
- COM 9.5-006: On site Fire Operations Training
- COM 9.5-007: Quality Assurance
- COM 9A-001, 9A-002, 9A-003 Detailed Fire Hazard Analysis of the Yard Area

### **Staff's Conclusions:**

The applicant has adequately addressed COL, COMs and the Tier 2 Departure in the FERMI 3 COL FSAR

## **9.5.2 – Communication Systems**

### **Summary of FSAR Section 9.5.2**

- Incorporated by reference ESBWR DCD, Section 9.5.2
- Describes the communications systems that provide intraplant communications and plant-to-offsite communications during normal, maintenance, transient, fire, and accident conditions
- Addressed 5 COL information items adequately
- Multiple independent and diverse systems; most with alternate power supply in case of loss of primary power source

### **Staff's Review of COL information items:**

- EF3 COL 9.5.2.5-1-A Emergency Notification System
- EF3 COL 9.5.2.5-2-A Grid Transmission Operator
- EF3 COL 9.5.2.5-3-A Offsite Interfaces (1)
- EF3 COL 9.5.2.5-4-A Offsite Interfaces (2)
- EF3 COL 9.5.2.5-4-A Fire Brigade Radio System

## 9.5.2 – Communication Systems

### Staff's Conclusions:

- Systems have equipment with capability to provide emergency communications support for the MCR, TSC, EOF, OSC, security, fire brigade, emergency plan, links to the NRC, principal response organizations, governmental units, and the public
- System equipment includes use of radio, private and public telephone, public address, sound power phones, fax, microwave, remote warning sirens and backup power as uninterruptable power systems and batteries
- No open items; one RAI - closed
- No confirmatory items
- Design adequately conforms to relevant regulations and guidance



# **Chapter 9 – “Auxiliary Systems” Conclusion**

In conclusion, with the exception of the confirmatory items identified, the staff has confirmed that the applicant has addressed the relevant information as specified in the referenced ESBWR DCD. In addition, the staff concludes that the applicant has met the applicable regulations and is in conformance with applicable guidance with respect to Fuel Storage and Handling, Water Systems, Process Auxiliaries, HVAC, and Other Auxiliary Systems as specified in the staff’s Chapter 9 SER.

**SER with No Open Items**  
**Chapter 9.0**  
**“Auxiliary Systems”**

**Questions/Comments**

**DTE Energy<sup>®</sup>**



**Fermi 3 COLA  
Presentation to ACRS Subcommittee  
Resolution to Open ACRS Questions  
from October 21, 2011 Meeting**

# Resolution to Open ACRS Questions from October 21, 2011 Meeting



## ACRS Open Questions

- *Does Detroit Edison intend to provide instrumentation for hazardous gas detection?*
- *Discuss transition from D-RAP to Maintenance Rule given possible differences in risk parameters.*
- *Provide bases for loss of offsite power (LOOP) frequency used in PRA evaluation.*
- *Provide bases for loss of service water frequency used in PRA evaluation given that there may be differences in Service Water system alignment.*
- *Provide bases for why flooding in the Yard is not a concern.*

# Resolution to Open ACRS Questions from October 21, 2011 Meeting



*Does Detroit Edison intend to provide instrumentation for hazardous gas detection?*

- Based on Fermi 3 Toxic Gas Analysis, safety-related monitors and control room isolation are not required for toxic gas hazards.
- Detroit Edison has determined that adequate protection is provided based on:
  - Low chemical hazards for Fermi 3 site.
  - Coordination with Federal, State, and local agencies will provide opportunities for notification of Fermi 3 if nearby accidents occur, including transportation accidents that may involve chemical hazards. For example, Emergency Management Plan for Monroe County addresses communication actions in the event of a hazardous material release or incident.

# Resolution to Open ACRS Questions from October 21, 2011 Meeting



*Discuss transition from D-RAP to Maintenance Rule given possible differences in PRA importance measures.*

- Fermi 3 D-RAP is based on the ESBWR D-RAP listing.
- D-RAP SSCs will be included in Maintenance Rule Program.
- No inconsistencies between D-RAP and Maintenance Rule risk significance measures at Fermi 3.
- Fermi 3 Maintenance Rule Program (FSAR Section 17.6) is based on NRC-approved NEI 07-02A.
  - Refers to NUMARC 93-01, Section 9.3.1, for methods to establish risk significant measures.
  - NUMARC 93-01, Section 9.3.1, includes flexibility in establishing risk significance measures.
  - Maintenance Rule Program includes D-RAP SSCs and expert panel SSCs (see Fermi 3 FSAR Section 17.4, STD COL 17.4-2-A).

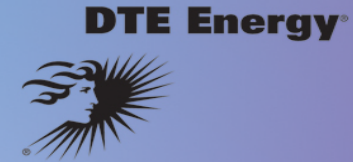
# Resolution to Open ACRS Questions from October 21, 2011 Meeting



*Provide bases for loss of offsite power (LOOP) frequency used in PRA evaluation.*

- ESBWR PRA LOOP frequencies are based on NUREG/CR-6890, “Reevaluation of Station Blackout Risk at Nuclear Power Plants Analysis of Loss of Offsite Power Events: 1986-2004”. The 2003 event is included (affected 9 plants).
- The plant specific  $1.73 \text{ E-}2$  frequency was based on the Fermi 2 PRA analysis which had been updated to include the 2003 event using a Bayesian update.
- The NRC staff has reviewed the Fermi 2 LOOP frequency in 2007 per an RAI associated with a Fermi 2 LAR and accepted the methodology of the Bayesian update.

# Resolution to Open ACRS Questions from October 21, 2011 Meeting



*Provide bases for loss of service water frequency used in PRA evaluation given that there may be differences in Service Water system alignment.*

[Later]



# Resolution to Open ACRS Questions from October 21, 2011 Meeting



*Provide bases for why flooding in the Yard is not a concern.*

For Fermi 3, flooding in the yard is not a risk significant concern.

- ESBWR PRA excludes consideration of flooding from external sources challenging the plant by specifying site parameters that preclude flooding from external sources. PRA addresses internal flooding of plant as an external event (see Section 1.3.2 and Section 13 of PRA).
- Exclusion is consistent with ASME PRA guidance for screening external flooding scenarios with a frequency of less than  $1E-6/yr$  (see ASME PRA Standard).
- Fermi 3 site characteristics are bounded by ESBWR site parameters for flooding.
- Fermi 3 site flooding event from external sources has an exceedance probability of less than  $1E-06$  (see ANSI/ANS-2.8-1992).