

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

Title: Advisory Committee on Reactor Safeguards  
Reliability and PRA Subcommittee

Docket Number: (n/a)

Location: Rockville, Maryland

Date: Tuesday, March 6, 2012

Work Order No.: NRC-1491

Pages 1-132

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

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

+ + + + +

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

(ACRS)

+ + + + +

RELIABILITY AND PRA SUBCOMMITTEE

+ + + + +

TUESDAY

MARCH 6, 2012

+ + + + +

ROCKVILLE, MARYLAND

+ + + + +

The Subcommittee met at the Nuclear  
Regulatory Commission, Two White Flint North, Room  
T2B3, 11545 Rockville Pike, at 1:00 p.m., John  
Stetkar, Chairman, presiding.

COMMITTEE MEMBERS:

- JOHN W. STETKAR, Chairman
- SAID ABDEL-KHALIK
- DENNIS C. BLEY
- MICHAEL CORRADINI
- STEPHEN P. SCHULTZ
- WILLIAM J. SHACK
- GORDON R. SKILLMAN

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

NRC STAFF PRESENT:

JOHN LAI, Designated Federal Official

ALAN KURITZKY

RICHARD CORREIA

MARTIN STUTZKE

KATHY GIBSON

DON HELTON

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

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

Preliminary Matters . . . . .	3
Level 3 PRA Project Plan . . . . .	8

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

1:15 p.m.

CHAIR STETKAR: The meeting will now come to order.

This is a meeting of the Reliability And PRA Subcommittee.

I'm John Stetkar, Chairman of the Subcommittee meetings.

ACRS Members in attendance are:

Dr. Michael Corradini;

Bill Shack;

Dennis Bley;

Steve Schultz, and;

Dick Skillman.

Yes. I forgot your first name. This is not a good day. Dick Skillman.

John Lai of the ACRS staff is the Designated Federal Official for this meeting.

The Subcommittee will hear the Preliminary Level 3 PRA Development Plan from the staff.

There will be a bridge line. To preclude interruption of the meeting the phone will be placed on the listen-in mode during the presentations and Committee discussions.

We have received no comments or requests

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 for time to make oral statements from members of the  
2 public regarding today's meeting.

3 The entire meeting will be open to public  
4 attendance.

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

9 The rules for participation in today's  
10 meeting have been announced prior to the notice of  
11 this meeting previously published in the *Federal*  
12 *Register*.

13 A transcript of the meeting is being kept  
14 and will be made available as stated in the *Federal*  
15 *Register* notice. Therefore, we request the  
16 participants in this meeting use the microphones  
17 located throughout the meeting room when addressing  
18 the Subcommittee. The participants should first  
19 identify themselves and speak with sufficient clarity  
20 and volume so that they may be readily heard.

21 As some background for some of the  
22 Subcommittee, or the folks here who haven't been privy  
23 to this, this is an interim meeting and I'm assuming  
24 Alan will give us some insights about what that means.  
25 We'd had an informal briefing, a couple of Members of

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 the Subcommittee, a month or a month and a half ago,  
2 something like that. And we felt at that time that it  
3 was probably better for the staff to have a little bit  
4 more formal venue to give us an update on where they  
5 are on the scheduling the plan and also a bit broader  
6 participation among Subcommittee Members to give them  
7 possible feedback that they might consider tweaking  
8 the schedule or the plan a bit if it seems reasonable.  
9 So, that's basically why we're we're here.

10 I don't believe that the staff is asking  
11 for a letter on this.

12 MR. KURITZKY: No.

13 CHAIR STETKAR: Because this is basically  
14 a very interim briefing.

15 And with that, I will turn the meeting  
16 over to Alan, I guess.

17 MR. KURITZKY: I think Rich Correia.

18 CHAIR STETKAR: I'm sorry. Rich Correia.

19 MR. CORREIA: Again, thank you for taking  
20 the time to listen to interim Level 3 PRA Project  
21 Plan. It is a plan in process. It's out for  
22 concurrence as we speak, so we're still drafting  
23 comments. We appreciate feedback and insights the  
24 Committee might have for us today.

25 As you know, the schedule of resources for

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 this project are pretty fixed by the Commission. They  
2 gave us x FTE, y dollars and four years. So, with  
3 that in mind we developed a plan to get to where we  
4 needed to be in four years and with some things that  
5 we will do, some things we will do in part, and some  
6 things we won't do at all. And you'll hear about  
7 that.

8 You mentioned the future meetings. We'd  
9 like to schedule meetings based on milestones versus  
10 a fixed schedule, so we'll be able to come back and  
11 give you good updates on where we are. And we'll work  
12 with John to set that up.

13 No letter, as Alan already mentioned.

14 So with that, I'll turn it over to Alan  
15 and Marty Stutzke's here to provide supporting  
16 information. Okay?

17 CHAIR STETKAR: Thanks.

18 MR. KURITZKY: Okay. Thank you, Rich.

19 As Rich said, I'm Alan Kuritzky. I'm  
20 leading up the effort for the Full-Scope Site Level 3  
21 PRA Project.

22 With me here is Marty Stutzke, who is one  
23 of our principal technical advisors for the study. And  
24 he might not like to admit to it, I consider him to be  
25 the father of this study that's about come up. But in

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701



1 any case --

2 CHAIR STETKAR: It's better than being the  
3 grandfather.

4 MR. KURITZKY: I won't go there.

5 We appreciate the opportunity to engage  
6 ACRS on this project. I think to call upon what Dr.  
7 Stetkar mentioned before, we did go into informal  
8 briefing of a couple of the ACRS Subcommittee Members  
9 about a month or so ago, and at that time Dr. Stetkar  
10 request that we have an actual Subcommittee briefing.

11 The plan that we're putting together right  
12 now that's getting submitted to the Commission in a  
13 couple of weeks is a very high level plan. It just  
14 kind of goes over our general thinking on the study.  
15 We have not yet put together a detailed plan that goes  
16 into specific tasks and items and levels of effort.  
17 So, a lot of the input or things that we should look  
18 at or not look at are going to kind of be developed  
19 over the next weeks or months as we get the project  
20 into full swing. So this document right now that's  
21 going to go to the Commission is a fairly high level  
22 one, so I wouldn't be as concerned with changes to  
23 this document are certainly open to whatever input  
24 that we receive, given the short turnaround to get  
25 this to the Commission. But whatever input we do

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 receive can certainly be folded in as we start to  
2 actually do the detailed plans for the project.

3 Just a little bit of background. As I'm  
4 sure probably everyone here is aware of, we submitted  
5 SECY-11-0089 to the Commission last July, and that  
6 laid out three different options for furthering Level  
7 3 PRA activities:

8 Option 1 was just do the status quo,  
9 maintain the status quo;

10 Option 2 was do some targeted research on  
11 some of the areas of PRA that needed some needed some  
12 additional work before moving on to a Full-Scope Level  
13 3 PRA, and then;

14 Option 3 was just jump right into the  
15 Full-Scope Level 3 PRA.

16 At that time the staff recommended to the  
17 Commission to pursue Option 2, primarily because we  
18 waned to minimize the impact on the limited number of  
19 qualified risk analysts in the Agency who were at the  
20 time were already committed to a lot of other high  
21 priority projects.

22 Consistent with the ACRS recommendation,  
23 the Commission decided to go ahead and have the staff  
24 pursue Option 3, but did extend the schedule from  
25 three years to four years.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1           The objectives of the study: The primary  
2 objective of the study is to actually update our Level  
3 3 PRA technology and do a study that takes into  
4 account all the things that have changed since over 20  
5 years ago when the last NRC-sponsored Level 3 study  
6 was performed. That was the NUREG-1150 studies back  
7 in the late '80s, and early '90s and there's been a  
8 lot of change since those days. There's been a lot of  
9 advancements in PRA modeling and severe accident  
10 modeling. There have been a lot of changes at the  
11 plants in terms of the operational and safety  
12 positions. And so we wanted to roll all that  
13 information into a new updated Level 3 PRA that might  
14 give us a new view on the risk profile.

15           Also, NUREG-1150 was a fairly expansive  
16 study in terms of scope, but there were a lot of  
17 things that were not addressed or weren't addressed in  
18 part, and we're trying to add a lot more of those  
19 items into the current study.

20           One of the other main objectives of the  
21 study is to extract new insights. Because we're going  
22 to have all this new type of information and because  
23 the scope was going to expand, we would expect that  
24 there would be quite a number of new insights that are  
25 different from what we've seen from previous PRA

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 studies. And we want to use those insights to enhance  
2 our regulatory decision making and to optimize the use  
3 of Agency resources in maintaining our primary mission  
4 objective.

5 Another objective of the study is to  
6 enhance the staff's PRA capability. I think as many  
7 of us are aware, there was a big 3 PRA activity many  
8 years ago and a lot of people got involved and  
9 experienced in PRA, and then there was more of a lull,  
10 particularly I guess on the regulatory side in the  
11 sense that we weren't generating a lot of new PRA  
12 analysts. Now we're at a point where we want to bring  
13 up the new crop of people to pass the torch to. So  
14 one of the objectives of the study is to try and  
15 develop our in-house PRA capability with some of the  
16 less experienced staff. And so that's one of the  
17 things that we want focus on.

18 We also want to take advantage of modern  
19 information technology processes. One of the things  
20 people have known with PRAs, we know that there's a  
21 whole spectrum of how well they're documented from the  
22 little tiny volume to the 16 volumes that sit up on  
23 the shelf. Even the 16 volume ones can't answer every  
24 question that you would have about what was done in  
25 the study. So, we want to try to use modern IT

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 processes to come up with ways to do a better job of  
2 documenting and making transparent the assumptions and  
3 basis that go into the study.

4 Lastly, we also hope by doing the study  
5 that we can demonstrate that such studies with this  
6 expanded scope are, in fact, technically feasible.

7 CHAIR STETKAR: Alan, I was writing some  
8 notes here. Did you want to talk much about the  
9 difference between stay to the practice methods or you  
10 want to go into --

11 MR. KURITZKY: I can. I have no slide,  
12 but I was going to get back into that, but here I just  
13 wanted --

14 CHAIR STETKAR: If you've got another  
15 slide, that's fine.

16 MR. KURITZKY: Thank you for mentioning.  
17 I do want to -- yes, it is an important point that  
18 this is going to be a state-of-practice PRA to the  
19 extent we can. I mean, obviously, there's some areas  
20 that we have to look into that there is no state-of-  
21 practice and we'll have to push the envelope a little  
22 bit, but it's basically a state-of-practice PRA.

23 CHAIR STETKAR: If you have a slide, you  
24 can talk more.

25 MR. KURITZKY: Okay. So speaking of the

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 expanded scope of this study, what we're trying to  
2 address in this new Level 3, Site-Level 3 PRA is all  
3 the radiological sources, all the major radiological  
4 sources on the site which includes multiple reactor  
5 unit, which include spent fuel pools and it includes  
6 dry cask storage. So we're trying to catch all those  
7 major sources of radiological material. The only  
8 things we're not including are sources of new fuel and  
9 also the radiological waste stream and smaller sources  
10 like calibration devices. But the major sources we  
11 want to all include in the study. So there's going to  
12 be a lot of interactions there. It was kind of alluded  
13 to; for those that were at the earlier meeting on  
14 spent fuel pool scoping studies, someone brought that  
15 issue up near the end of the meeting about how you  
16 address the impact of one spent fuel pool or  
17 something. If the reactor's having a problem, what's  
18 the effect on the spent fuel pool, et cetera? And  
19 those are the types of issues that we want to try to  
20 address with this study.

21 Besides looking at all those different  
22 radiological sources, we also are looking at all the  
23 different external and internal hazards. We're  
24 looking at internal initiating events, internal fires,  
25 internal floods, earthquakes, external flooding, you

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 know tornados, high winds. So we're running the whole  
2 gamut of internal/external events.

3 And we're also looking at all different  
4 modes of operation; not just full power operation  
5 which was done in in NUREG-1150, but also looking at  
6 low power and shutdown operation.

7 So, again, this is a very expansive scope.  
8 One thing that I forgot to mention that what we're not  
9 including is sabotage or intentional malevolent acts.

10 The study besides having such a grand  
11 scope is also, like I said, going to try to  
12 incorporate the changes that have occurred over the  
13 previous 20 years. In PRA technology there's been a  
14 lot of changes, particularly in areas like human  
15 reliability analysis, common-cause failure modeling.  
16 Data, we have a lot more and better data to use in the  
17 model.

18 One area in particular that there's been  
19 a lot advancement is severe accident modeling, as the  
20 SOARCA Project is a perfect example of the advancement  
21 in our understanding of modeling severe accident  
22 phenomena. So we want to leverage all that new  
23 knowledge into this new study.

24 In the area of plant operation and  
25 performance there's a lot of changes there, too.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 There's maintenance and operations and training  
2 practices that have changed.

3 There's are the implementation of  
4 strategies from the Severe Accident Management  
5 Guidelines, from the Extensive Damage Mitigation  
6 Guidelines and other b(5)(B) mitigation strategies,  
7 all of that has changed what's called the Defense  
8 Posture or Safety Posture of the plants.

9 There's also changes that occurred because  
10 of the StaTION Blackout Rule. On the other hand,  
11 there's also things like higher fuel burnup and power  
12 uprates that will go to effect possibly some of the  
13 success criteria calculations and the sequence timing.  
14 So we want to include all that in the study also.

15 Things that we'll probably leave out, I  
16 should mention that there are certain things that  
17 we're just not going to be able to account for in the  
18 study. Examples are:

19 Software failure probability. Many of  
20 these same Members are aware that we've been  
21 struggling with digital I&C systems and how to  
22 incorporate software failure probability into a PRA.  
23 That's a whole separate hornets' nest that we're not  
24 going to address as part of this study. Luckily,  
25 Ocone is not the plant that we're doing for the

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701



1 study.

2 There's also the issue like aging, the  
3 effect of aging on structures, systems and components.  
4 We're not going to be addressing aging issues as part  
5 of the study either.

6 CHAIR STETKAR: Alan, in some sense aging,  
7 at least through the life of a plant so far, would  
8 theoretically be included, right,

9 MR. KURITZKY: Well, I mean --

10 CHAIR STETKAR: In terms of their actual  
11 operation, let's say?

12 MR. KURITZKY: Right. Operational  
13 experience and data will show it.

14 CHAIR STETKAR: Yes.

15 MR. KURITZKY: But I guess --

16 CHAIR STETKAR: But not trying to project  
17 out?

18 MR. KURITZKY: Right, right. And some of  
19 the other, you know physical structural effects of  
20 aging.

21 CHAIR STETKAR: Sure.

22 MR. KURITZKY: One thing I do want to  
23 point out is for this study, unlike NUREG-1150 which  
24 looked at a spectrum of reactor and containment types,  
25 this is for a single, a dual-unit site. So we can't

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 really expect that the insights we'll draw from this  
2 study will necessarily apply to the fleet of plants.  
3 Some may, hopefully, but that's going to be more hit  
4 or miss.

5 MEMBER SCHULTZ: Alan, is that a resource  
6 issue in terms of decision to go with this --

7 MR. KURITZKY: Yes, I think that's a  
8 straight resource issue. Yes, if we want to do  
9 multiple studies, you're just multiplying, you know  
10 level of effort. As Rich mentioned, we got X years  
11 and Y dollars, which I'll mention shortly what X and  
12 Y are. So that's just what we can do.

13 MEMBER CORRADINI: Since I'm not a  
14 software person, I don't appreciate; how hard is it to  
15 -- so what does one take away if you're not going to  
16 look at software failure rates? That all software is  
17 perfect in this --

18 MR. KURITZKY: No, no. Well, I mentioned  
19 that I'm glad we're not doing Ocone. The good thing  
20 is that -- and I don't know if it's a good thing, but  
21 from a modeling point of view, for our study point of  
22 view the good thing is that most of the plants in this  
23 country do not have digital I&C safety systems. They  
24 have parts of certain systems that are digital I&C,  
25 but Ocone is the first one to actually to get a whole

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 scale RPS and ESFAS system that are going to be  
2 digital.

3 And some of the overseas plants have  
4 digital systems and protection systems, but we don't  
5 have them so much here.

6 MEMBER CORRADINI: So the answer to my  
7 question: This is irrelevant for everybody.

8 MR. KURITZKY: Except for probably Ocone  
9 at this point, and maybe some others to a smaller  
10 degree. For our plan it's irrelevant.

11 MEMBER BLEY: Alan, did you say that you  
12 would be including using the SMAGs and b(5)(B)  
13 equipment?

14 MR. KURITZKY: Yes. Yes.

15 MEMBER BLEY: And for the plant, you have  
16 a plant?

17 MR. KURITZKY: Yes.

18 MEMBER BLEY: The plant you have if you  
19 looked, how did they look on that survey of you really  
20 have those things up to date and workable and what are  
21 you going to do about that?

22 MR. KURITZKY: Well, that is all going to  
23 be part of the study. I do want to, again, mention,  
24 as some my slides will point out, we're in the very  
25 early stages here. We just got the site selected, and

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 I'm going to get to that slide, too. We just got the  
2 site selected.

3 MEMBER BLEY: I'll wait. Go ahead.

4 CHAIR STETKAR: They're going to tell us  
5 officially today.

6 MR. KURITZKY: Right, right. I was saving  
7 it.

8 MEMBER CORRADINI: Is it left out of the  
9 paper so we don't even know --

10 MR. KURITZKY: No, it's --

11 MEMBER SCHULTZ: Alan, just a comment  
12 related to the question earlier about the single  
13 multi-unit site.

14 MR. KURITZKY: Yes.

15 MEMBER SCHULTZ: I would look back then at  
16 the objectives --

17 MR. KURITZKY: Yes.

18 MEMBER SCHULTZ: -- and you could  
19 certainly state that you can meet all of your  
20 objectives by only looking at one single multi-unit  
21 site.

22 MR. KURITZKY: Right.

23 MEMBER SCHULTZ: Because the objectives  
24 are generic. They're focusing on the methodology, the  
25 capabilities, the approaches and training the NRC and

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 coming up with methodology there. So, rather than put  
2 it as a negative, it can be a neutral --

3 MR. KURITZKY: Right. Except -- right.  
4 And I agree. Thank you. Only the second bullet,  
5 extract new insights, of course that one --

6 MEMBER SCHULTZ: Right.

7 MR. KURITZKY: -- you can always do more  
8 if you had more sites to look at.

9 MEMBER SCHULTZ: That's correct.

10 MR. KURITZKY: We can -- we will get new  
11 insights I'm sure with this study as it is. Of  
12 course, you could always get more.

13 MEMBER SCHULTZ: If you broadened the  
14 number of case studies, yes.

15 MR. KURITZKY: Right, right.

16 Okay. A little bit about the resource  
17 plan for the project. As I mentioned before, the  
18 Commission gave us a SRM of four years to do the  
19 study. We've already embarked on significant, I would  
20 call them pre-planning activities early in FY 12.

21 We've done things like work with industry  
22 and external stakeholders to come up to come up with  
23 the site to be the subject of the study.

24 We have also been working to assemble the  
25 project staff, the project team.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1           We've been working on putting together  
2 contract actions to go out for commercial bid since  
3 we're going to be using commercial lab contractors and  
4 commercial actions requiring long lead time. So we had  
5 to jump on that right away.

6           CHAIR STETKAR: Can I ask about that?  
7 Just, were you going to talk more about that or is it  
8 appropriate --

9           MR. KURITZKY: Yes. The staffing and the  
10 contracting, yes.

11          CHAIR STETKAR: I'll wait.

12          MR. KURITZKY: Okay. So I just wanted to  
13 mention, we have commercial and contract action. We  
14 only have one request for proposals that's out on the  
15 street for some general PRA support. There's going to  
16 be a second one going out shortly for thermal  
17 hydraulics support and severe accident modeling  
18 support.

19           We've also worked on putting together a  
20 charter for a technical advisory group that we're  
21 going to establish for guiding us and helping us with  
22 the project. And we're in the process of standing  
23 that group up.

24           We also have put together these initial  
25 project parameters, which is the subject of this

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 presentation, and which is going to go to the  
2 Commission, like I said, in a couple of weeks.

3 And an initial communications plan that  
4 was an attachment to the project plan.

5 So those are things that we've already  
6 been working on. In our mind, we're starting the  
7 clock in April or next month when we pass this plan to  
8 the Commission, and therefore we're just now at the  
9 point to the end of March of 2016 for completing the  
10 study.

11 CHAIR STETKAR: The Commission four years  
12 understanding that time clock?

13 MR. KURITZKY: We're going to find out.

14 CHAIR STETKAR: Okay.

15 MEMBER CORRADINI: Understand or agree?

16 CHAIR STETKAR: Well, the Commission's  
17 time clock started.

18 MR. KURITZKY: Right. I am willing to  
19 agree that -- agree is more important to me than  
20 understand.

21 Any case, so here's X and Y --

22 MEMBER CORRADINI: It is better to ask for  
23 forgiveness than permission.

24 MR. KURITZKY: Right. But we can also be  
25 told you now have three years to finish the study.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 Hopefully not.

2 Okay. X and Y. So we have a SECY-11-089  
3 that the estimates were 24 FTE and \$6 million to  
4 complete the project, and in that case it was over a  
5 three year period. Now that the SRM came back and  
6 said go forth and do Option 3, it doesn't specifically  
7 mention anything about resources, so we're assuming  
8 that the 24 FTE and 6 million still hold.

9 The only purpose of this slide really,  
10 besides to tell you what X and Y are, is just to show  
11 that because the money and the resources are not being  
12 spent on the straight, constant basis because one of  
13 the big programmatic insights from SOARCA was that  
14 there's a lot of time taken at the end of the study to  
15 generate insights, have a peer review, to respond to  
16 the peer review, and the comments can be very  
17 extensive and then to finalize the whole study and  
18 report. That can take a lot of time. But we have a  
19 four year window for doing the study. We're really  
20 going to shoot to try to get the base study done in 2½  
21 years. That leaves us that year and a half at the end  
22 to take care of all items like generating insights,  
23 doing the peer review, et cetera. So, you see a lot  
24 of front-loading in the expenditure of resources for  
25 the study.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701



1                   MEMBER SKILLMAN: Alan, what confidence do  
2 you have that you will have the NRC staff resources  
3 that you want and that the contractors that you need  
4 will be available to you?

5                   MR. KURITZKY: I'm not going to put a  
6 number on that, but it's a very good question because  
7 I have concerns. I have concerns in both those areas.

8                   Staff-wise, as I think I alluded to  
9 before, there is a limited number of qualified PRA  
10 analysts here in the Agency. There's a lot of  
11 projects right now that are demanding their attention,  
12 NFPA 805 is a big one, the Fukushima response is a big  
13 one, and a lot of other activities. So, it is a  
14 struggle to make sure that we have the appropriate  
15 resources to apply to the project.

16                   Contracting Officer, I mean you know the  
17 days back in the '80s or so when there were these big  
18 PRA consulting firms out there that you could just go  
19 to and do all of your work, don't really exist that  
20 much. More of them are working with industry than  
21 they are with regulators. And the national lab  
22 themselves are spread thin with their PRA people.

23                   So, it is going to be a challenge piecing  
24 together the proper staff both internally and  
25 externally to get the work done.

1           So, I'm not going to qualify what my level  
2 of confidence is in that, but it is something that is  
3 going to take some active work and there's going to be  
4 some uncertainty there.

5           MEMBER SKILLMAN: Thank you.

6           MEMBER BLEY: Do the full-time equivalents  
7 that exists here include the more junior people who  
8 will be joining it and essentially are involved in  
9 training much of the time as well as actual productive  
10 work?

11          MR. KURITZKY: It does in a sense that  
12 right now -- I mean, again we are still working on the  
13 staffing. I'm going to go over in a couple of slides  
14 generally like the kind of expertise that we need in  
15 the technical areas that we need to have done in.

16          Like, in the actual plan, we go into a  
17 little more detail here. It just kind of gives a  
18 little overview of it.

19          MEMBER BLEY: Yes.

20          MR. KURITZKY: You know, internal  
21 deliberations which are ongoing now with the  
22 management to determine how to staff the project, we  
23 have some ideas of who could do what work. And most  
24 of the people we're talking about, whether they be  
25 senior or junior, will be part of the FTE. There is

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 the potential that some people might come over as part  
2 of a training program, which the might not be charged  
3 as FTE.

4 MEMBER BLEY: That's what I was hoping.

5 MR. KURITZKY: Here's the concern. The  
6 concern is that --

7 MEMBER CORRADINI: Whether to do it  
8 yourself and then tell somebody how to do it?

9 MR. KURITZKY: Well, that's always an  
10 issue. I mean, it's always more efficient to do it  
11 yourself than to tell someone else to do it. But the  
12 reality is -- well, these resources ar not small by  
13 any stretch of the imagination. When you look at the  
14 breadth of the scope, when you start breaking down all  
15 of the aspects of this study and all the scope areas  
16 in terms of Level 1, 2 and 3 and spent fuel pools, dry  
17 cask and reactor, and shutdown, low power, full power,  
18 seismic events; all these things it gets small real  
19 quickly. The pieces of the pie get very small. And  
20 so there's really not a lot of excess resources to  
21 absorb inefficient use of, essentially, training  
22 people. However, though that is one of the goals in  
23 the project.

24 The other concerns is besides the fact  
25 that we have some type of resource of concerns, is the

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 fact that a lot of the areas that you would typically  
2 bring a young person in to start learning PRA would be  
3 like doing fault tree analysis, maybe working on some  
4 data, maybe working on how they do so some event  
5 sequence diagrams or event trees; a lot of the kind of  
6 the training type paths and the paths that were used  
7 to bring staff -- get new people involved in doing a  
8 PRA, we're going to be basing this on the pilot site's  
9 PRA. And so a lot of that stuff has already been done.  
10 There's going to be some effort to go through it and  
11 make sure it looks good and to transfer over to maybe  
12 our software. But the part about checking to see that  
13 we're okay with what they've done, that's not  
14 necessarily going to going to be to a junior person.  
15 So the less experienced people, you know it's going to  
16 be hard to find spots to fit them.

17 Now, there are going to be some areas. We  
18 have particularly one person in Research whose  
19 knowledgeable about low power and shutdown and  
20 external events. And he's very good about training  
21 young people and bringing them in to help him to do  
22 the work. And so we're going to make use of that. But  
23 unfortunately there's limited cases where we can  
24 effectively do that.

25 CHAIR STETKAR: At one level it's not our

1 role do project planning or tell them to use the  
2 people or money. So, you know, as much as we'd like  
3 to do that, it isn't our role.

4 MEMBER CORRADINI: And we're not expert at  
5 it anyway, so there's no point.

6 CHAIR STETKAR: Yes, that's right. Yes.

7 On the other hand, technical issues, you  
8 know in terms of the technical requirements and how  
9 they're put together I think it might be fair for us  
10 to comment on.

11 MR. KURITZKY: Right, and that's really  
12 what we're looking at, too. Because again --

13 CHAIR STETKAR: Yes. Like I said, as we  
14 get into more of the details here, we can understand  
15 a little --

16 MR. KURITZKY: Right, right.

17 MR. KURITZKY: -- bit more of the thought  
18 process that went into sort of, you know organizing  
19 technical scope.

20 MR. KURITZKY: Right.

21 CHAIR STETKAR: Or over the X and Y.

22 MEMBER CORRADINI: So since we're not  
23 expert on it, we can then give you opinions which you  
24 can then discard?

25 Have you heard about going to universities

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 and get doctoral students lent to you over three to  
2 six months or a year time span with nominal amount of  
3 monies essentially do some of the dog work, excuse my  
4 English --

5 CHAIR STETKAR: This from someone who  
6 actually has never done a PRA in his life.

7 MEMBER BLEY: Careful, you invited him  
8 here.

9 MEMBER CORRADINI: I can leave.

10 MR. KURITZKY: He'll take his ball and go  
11 home.

12 As far as this project we haven't  
13 specifically thought about that. We have been working  
14 with contractors, other areas. We've had the  
15 contractors all the time for labs. I've brought in  
16 graduate students or post-docs, whatever, to help do  
17 work at, you know lower cost. In this case, again, it  
18 kind of goes back to just the fact that we have  
19 limited --

20 MEMBER CORRADINI: I figured what the  
21 response would, but the only reason I asked it like  
22 that is that this is just in some sense is a well  
23 publicized effort that you need long-term human  
24 resource improvement in. And to the extent that you're  
25 involving people, at least minimally, that it doesn't

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 impact or adversely impact what you're doing and  
2 actually could have a long-term effort. That's all I  
3 guess I'm --

4 MR. KURITZKY: Yes, I figured that. But  
5 we actually have quite a few people already in-house--

6 MEMBER CORRADINI: Okay.

7 MR. KURITZKY: -- who are kind of set to  
8 work to help us on this.

9 MEMBER CORRADINI: Just curious.

10 MR. KURITZKY: So that would be our  
11 priority.

12 CHAIR STETKAR: In some of the hot spots,  
13 I'm waiting to see, you know as we discover what site  
14 it is and what they really may have already  
15 accomplished some of that, there may very well be  
16 technical opportunities to use -- you know that type  
17 of education process. But it all depends on, you know  
18 what's available in-hand --

19 MR. KURITZKY: Right.

20 CHAIR STETKAR: -- you know on Day Zero.

21 MR. KURITZKY: Right. But we have this  
22 job to get done.

23 MEMBER SCHULTZ: Alan, without getting  
24 into the answer, one of the things the Commissioners  
25 might find useful with a slide like this would be to

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 also translate, as you mentioned it, you've got total  
2 resources for staff and contractors and that's using  
3 the dollars, but the number of contractors along a  
4 column and the number of staff resources, individuals,  
5 that would be involved would be something that I would  
6 think they would be interested in.

7 MR. KURITZKY: Yes. You know, the stuff in  
8 the actual plan itself goes into a little more detail.

9 MEMBER SCHULTZ: Yes.

10 MR. KURITZKY: I do have tables that show  
11 that. I think those are just ones I've been using  
12 internally because when it goes down to individuals  
13 and things, that's kind of more of an internal  
14 planning document. So, I can't remember if we talked  
15 about -- because in reality because I'll get to it in  
16 a couple of slides, the positions you're going to see  
17 -- well, let me just see.

18 MEMBER SCHULTZ: I was going toward one of  
19 your goals and objectives is associated with expanding  
20 capability within the Agency. And so numbers of staff  
21 that would be there or involved over the course of the  
22 four years could be of interest.

23 MR. KURITZKY: Right. Unfortunately it's  
24 hard to a priori figure out what that's going to be.  
25 There's going to be a lot of new availability, as Dr.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701



1 Stetkar mentioned. We'll have to wait and see what  
2 information we get from the licensee so we know what  
3 tasks needs to be done --

4 MEMBER SCHULTZ: That's right.

5 MR. KURITZKY: -- and what kind of effort  
6 is needed to be done and who is available to do it.  
7 So I have to be fairly fluid in the numbers.

8 MEMBER SCHULTZ: You can speak to it,  
9 though.

10 Thank you.

11 MEMBER SKILLMAN: Alan, let me ask a  
12 question here. In my years I've found that one of the  
13 most important relationships the site had is the site  
14 PRA person's relationship with the region PRA  
15 specialist. Many times we would have an event or a  
16 situation that was odd or peculiar and communications  
17 between those two individuals disarmed what might have  
18 been perceived as an emerging event at the unit. It  
19 turns out those folks spoke the same language.

20 MR. KURITZKY: Yes.

21 MEMBER SKILLMAN: Have you given  
22 consideration to having another column of industry  
23 participation of the site individuals whose full time  
24 task it is to do PRA? The benefit to them would be to  
25 see this task unfolding, and I'm not sure how the

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 conflict of interest would be resolved, but it could  
2 be that by having deeply involved people assisting  
3 you, you end up with a better product sooner and the  
4 owner/operators ends up with a product that they're  
5 confident in.

6 So there might be another column. It  
7 could be the Dr. Corradini column which is capable of  
8 graduate students, and there could be another column  
9 of industry individuals who for, perhaps a two month  
10 assignment or a three month assignment, would come in  
11 basically wearing the same clothes you're wearing  
12 because they think that same way to fill in the plants  
13 and make this task move along at perhaps even a higher  
14 level than it might otherwise have proceeded.

15 MR. KURITZKY: I appreciate the kind of --  
16 and I don't want to make this table more than what it  
17 is. I mean, this table is really just to demonstrate  
18 that we're going --

19 MEMBER SKILLMAN: How much?

20 MR. KURITZKY: -- to have those resources  
21 up front as opposed to spreading over four years.

22 MEMBER SKILLMAN: Yes.

23 MR. KURITZKY: The idea of getting  
24 licensee involvement, though, is a very good one.  
25 That's a critical item to --

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 MEMBER SKILLMAN: Only for buy-in.

2 MR. KURITZKY: Right. And in fact, we  
3 haven't gotten to that slide yet and we'll get to site  
4 selection, but licensee willingness to cooperate is  
5 one of the two high priority criteria for selecting  
6 the site. Because we need to have a site that was  
7 willing to really work with us on this, and we've  
8 already made contact with that licensee and we  
9 essentially the PRA footman, the manager of PRA  
10 involved with us. And one of the steps we're going to  
11 be going to next is working with the Division of  
12 Operating Reactor Licensing and NRR to establish  
13 communication protocols to how we can work and  
14 exchange information with the licensee.

15 We've also been trying to involve the SRA  
16 from Region II who is involved who has the plant  
17 underneath him. So that we're getting all the people-  
18 -

19 MEMBER SKILLMAN: I'm talking about  
20 multiple licensees, not just one.

21 MR. KURITZKY: Right. But this guy works  
22 for the one licensee, so --

23 MEMBER SKILLMAN: Thank you.

24 MEMBER CORRADINI: Just since we've beaten  
25 this one, I do think this point might be just another

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 version of what I'm asking, which is some kind of  
2 quasi-volunteerism for a very specific task that don't  
3 detract from your end goal but actually would  
4 essentially then create more interest or involvement.

5 MR. KURITZKY: Right. Like I said, we're  
6 going to work very heavily with the licensee. But one  
7 thing we have play off here is we want to leverage all  
8 the information work that they've done, because that  
9 certainly minimizes what we have to do, but we also  
10 need to keep them at kind of arm's length because they  
11 are a licensee and we're the regulator and this study  
12 is really our study. And so we don't want it to be  
13 viewed as the licensee just did a study that we just  
14 signed onto. So we do have to --

15 MEMBER SHACK: But you are going to use  
16 their PRA rather than your SPAR model?

17 MR. KURITZKY: No, we're not. In fact,  
18 I'll get to that shortly.

19 MEMBER SHACK: Okay.

20 MR. KURITZKY: I'll get to that shortly.

21 Okay. I guess just to recap here, I think  
22 we probably talked all about the project team  
23 composition already.

24 Again, as a in any PRA, you need a lot of  
25 different PRA people. You need a lot of supporting

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 technical areas, people with experience in thermal  
2 hydraulic analysis, severe accident analysis, seismic  
3 analysis; there's very many different areas that need  
4 to be covered when you're doing a full scope PRA.

5 MEMBER SHACK: Another question, Alan.

6 Are you going to go at this where you do  
7 a Full-Scope Level 1 and then go marching forward, or  
8 are you going to start with a Level 1 internal events  
9 and take that to Level 3?

10 MR. KURITZKY: No. In fact, the reality  
11 of it is you're going to put your Level 1 internal  
12 events model together first. And then essentially  
13 it's likely you're going to pull from the licensee to  
14 start with and we're going to comport it over. And so  
15 you're essentially going to end up with your Level 1  
16 internal events model as your core base. Then --

17 CHAIR STETKAR: Full power only?

18 MR. KURITZKY: Full power. Full power.

19 And that's what you have.

20 Now, from that point forward you can  
21 decide how you want to go about doing analysis. It  
22 depends on what information is available to you and  
23 what staff you have available, and how many things you  
24 can do at once. You're going to build up, and this is  
25 a multi-dimensional project. So, you're going to

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 build out in terms of Levels 1, 2 and 3, you're going  
2 to build out in terms of, you know all the  
3 external/internal hazards. You're going to build out  
4 in terms of, you know starting in full power but then  
5 going to low power and shutdown. We have the spent  
6 fuel pool to deal with, we have the dry cask storage  
7 to deal with. So there's all different types of  
8 directions that you can move out.

9 And even if you could do every single  
10 direction at once, you wouldn't necessarily want to do  
11 every single direction at once. Certain information  
12 will feed other parts of the project so you wouldn't  
13 necessarily want to do them all. Might want to see  
14 that all the people are available. So it is going to  
15 be a building process.

16 CHAIR STETKAR: Are you going to talk more  
17 about that process in this detail?

18 MR. KURITZKY: Not in detail, because  
19 again as I mentioned --

20 CHAIR STETKAR: Okay. Let's talk a bit  
21 about it then.

22 MR. KURITZKY: Okay.

23 CHAIR STETKAR: Because since we don't  
24 manage projects or tell you how to organize people,  
25 that's not our business. On the other hand, this is

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 a very -- no. This is a very ambitious schedule  
2 especially if I thought I heard you say you want to  
3 get all the technical work done in 60 percent of the  
4 calendar time.

5 MR. KURITZKY: Right.

6 CHAIR STETKAR: So we're not talking about  
7 a four year project, we're talking about a 2½ year  
8 project.

9 MR. KURITZKY: Yes.

10 CHAIR STETKAR: Without risking too much  
11 babbling, that's going to be really challenging. So  
12 the question is then: How do you organize technical  
13 tasks such that interim milestones have useful  
14 technical content in a sense of addressing the issue  
15 of an integrated Level 3 PRA? If it comes out to the  
16 end of four calendar years and you've done 90 percent  
17 of the work on a 100 percent of the tasks --

18 MR. KURITZKY: Yes.

19 CHAIR STETKAR: -- that might not  
20 necessarily be as beneficial as doing 100 percent of  
21 the work on, you know 50 percent of the tasks.  
22 Because you might learn an awful lot about integrating  
23 Level 3 PRA model by taking, for example full power  
24 all the way out through Level 3 --

25 MR. KURITZKY: Right.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 CHAIR STETKAR: -- while you're making a  
2 decision that says well the most expediate today seems  
3 to be let's finish all the Level 1 internal, you know  
4 for everything and worry about the Level 2 later.

5 MR. KURITZKY: Right.

6 CHAIR STETKAR: And that might factor in,  
7 you know how you approach the project technically.  
8 And you say well, you haven't quite sorted it all out  
9 yet: At this point in the process it's time to sort  
10 that out.

11 MR. KURITZKY: Right. And that's the next  
12 stage. That's our next stage. We get this plan out  
13 the door in the next week or two and we're moving  
14 forward to staffing and more details. Well, there'll  
15 be staffing, there'll be finding out exactly what  
16 information is available from the licensee.

17 OFFICER EVANS: Okay. And you don't know  
18 that?

19 MR. KURITZKY: No, we don't know that yet.  
20 We don't. And that's, again --

21 CHAIR STETKAR: That's a key element.

22 MR. KURITZKY: Right. But we can lay out  
23 the timing and the level of the effort for all the  
24 tasks of the study. We need to know what we're  
25 starting from; what the delta is.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701



1           MEMBER BLEY: Just one last thing in that  
2 area and one comment you mentioned earlier.

3           You don't have six months to get this  
4 organized and then really start working hard.  
5 Somebody's got to start real soon doing some hard  
6 work.

7           MR. KURITZKY: Right.

8           MEMBER BLEY: Planning work.

9           The other thing, when you went through all  
10 the expertise, I didn't hear you say operations. So,  
11 you really need some operators somehow. You've got  
12 some really great ones here on the staff in NRR and  
13 NRO. I don't know if you can break any time from them,  
14 but if you can, they'll be worth any three analysts  
15 you can find.

16          CHAIR STETKAR: Or access somehow to the  
17 site, the actual site operators.

18          MEMBER BLEY: But even if you get those,  
19 which would be best, getting some of your own involved  
20 along the way is an essential way of keeping good  
21 sense--

22          MR. KURITZKY: Yes. Yes. Anybody who's  
23 done PRA that that's an invaluable asset.

24          MEMBER BLEY: But I just didn't hear you  
25 say.

1 MR. KURITZKY: Sorry. I'll make a note.

2 CHAIR STETKAR: Fortunately, in my  
3 Division we do have a former CEO reactor operator  
4 available.

5 MEMBER BLEY: Good.

6 MR. KURITZKY: Okay. So, as we mentioned  
7 before, there's a whole team of -- the team will be  
8 composed of a bunch of senior and to the extent  
9 possible, junior staff in the areas of PRA and  
10 supporting technical areas, including operations. To  
11 the extent practical, we're going to use existing --  
12 or use RES personnel, Office of Research personnel to  
13 do the study. There are some areas that we'll  
14 possibly have to go to the other offices, either  
15 because the expertise is exists there in a particular  
16 area or because of limited, just the availability of  
17 personnel in the Office of Research.

18 One example where we are going to go to  
19 the other offices is for this technical advisory group  
20 that I mentioned. That's going to be comprised of  
21 senior level PRA advisors from the different offices  
22 as well as some senior level advisors in some of the  
23 other supporting technical fields.

24 CHAIR STETKAR: I don't think you've  
25 mentioned that yet.

1 MR. KURITZKY: When I was mentioning the  
2 pre-planning activities I mentioned we were standing  
3 up the advisory -- it wasn't on the slide. It wasn't  
4 on the slide.

5 CHAIR STETKAR: Yes.

6 MR. KURITZKY: Also as I did mention  
7 before, we are going to look at getting both  
8 commercial and DOE lab contractor support for the  
9 project because even though the goal is trying to do  
10 as much of this in-house as possible, there are going  
11 to be areas, particularly some of the more challenging  
12 state-of-the-art or innovative type areas where we're  
13 probably going to want to get some expertise from  
14 outside as well as the mere fact that we have  
15 limitations on many experienced PRA ops we have to put  
16 on the project in-house. So, we'll be using  
17 contractors to some extent.

18 CHAIR STETKAR: I've heard from you don't  
19 need to know where, concerns that your ability to let  
20 commercial lets are very limited to the extent that  
21 anybody who actually has done real work on real PRAs  
22 for existing licensees are excluded from bidding on  
23 this work, is that true?

24 MR. KURITZKY: Well, I mean if there's a  
25 company that does work for the industry, obviously

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 they're not going to be bidding on an NRC contract.

2 If there is an individual who did work on  
3 industry PRAs who now works for a company that does  
4 not do work for industry, then that's fair game. I  
5 think that's fair all the way across the board.

6 So, there are definitely people out there  
7 that have experience doing PRAs that are eligible to  
8 bid on the project. Obviously, right now it just seems  
9 -- and this is just my own personal opinion, it seems  
10 to me that a lot of the PRA expertise right now in the  
11 commercial area is with companies doing work for the  
12 licensees. And those companies would not be allowed  
13 to bid. But that's not to say there aren't still at  
14 least several very capable companies out there who can  
15 support us in this project.

16 And, in fact, what we did also is prior  
17 to starting to prepare the contract actions for  
18 commercial support, we put out sources-sought notices  
19 in FedBizOpps for both PRA and thermal hydraulic and  
20 severe accident support. And so we've received  
21 already input from several companies with summaries of  
22 their expertise in the area. So, we know that there  
23 are at least some companies out there who can support  
24 us.

25 CHAIR STETKAR: Summaries of expertise and

1 actual people work who have done work often times are  
2 different --

3 MR. KURITZKY: That is. And, in fact, not  
4 only that but you can see a résumé for someone who  
5 says they did a lot of work in PRA and they'll list a  
6 dozen PRAs they've worked on. And you find out later  
7 that, you know they're the ones who stapled the  
8 reports together.

9 So, in fact, the contract going right now  
10 what we put out in the Request for Proposal,  
11 specifically says that bidders have to not only say  
12 what expertise they have, but each person proposed we  
13 ask them to tell us what tasks they did on each PRA.  
14 Because I want to know what work they did.

15 CHAIR STETKAR: Good.

16 MR. KURITZKY: And whether or not that  
17 comes back, I don't know. But I mean we put it in  
18 there anyway.

19 MEMBER SHACK: And you can get a  
20 commercial contract out in less than 2½ years?

21 MR. KURITZKY: Well, it's taking longer  
22 than initially we thought it was going to take. Like  
23 I said, the one is already out now for bid, so  
24 another one hopefully soon.

25 MEMBER SHACK: Well, getting it out for

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 bids is one thing, getting --

2 MR. KURITZKY: Getting it out for bid was  
3 pretty tough.

4 Okay. And then lastly, I just want to  
5 mention going back to some of the statements we heard  
6 before I think from Mr. Skillman talking about getting  
7 industry involved. And we also are going to try to  
8 engage -- we plan to engage industry to try to  
9 encourage their participation in peer reviews. We  
10 plan to have at least peer reviews for this project:

11 One occurring kind of like at ASME Level  
12 1 PRA, LERF standard type of peer review. That would  
13 cover the aspects of the PRA that fall under that  
14 standard, and then also a;

15 A second peer review that would cover the  
16 entire project, stuff that goes beyond what's in the  
17 current PRA standard.

18 And we are hopeful to get industry  
19 participation to essentially lead those peer reviews  
20 and heavily stock the peer review panels. So that's  
21 one area that we want to get industry participation.

22 Of course, as mentioned before, we will  
23 want -- the volunteer licensee will need a tremendous  
24 amount of support, you know from the -- and then  
25 there's also, as I'm going to get to I guess shortly,

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 but I'm going to talk about our interaction with EPRI  
2 also on this project. So we are looking to get  
3 industry support in a number of different ways.

4 Here's an organizational chart that shows  
5 generally some of the positions in the project team.

6 There's a Program Manager, which is myself  
7 and who is in charge of the project and will oversee  
8 all the different aspects.

9 I'll be supported by two principal  
10 technical advisors who are senior PRA experts at the  
11 Agency. One is going to be Marty, the other one is  
12 going to be Mary Drouin.

13 We also are going to be supported by the  
14 TAG, as I mentioned. The Chairman there will be  
15 Nathan Siu.

16 For programmatic support, there's two  
17 positions that we have on the chart here. We have a  
18 Project Coordinator who essentially will be assisting  
19 me in almost all programmatic matters of the project  
20 as well as managing many of the commercial and DOE  
21 contracts. And that's going to be Anders Gilbertson  
22 from the Office of Research.

23 And then we have another person who is  
24 going to be heading up our communications team.  
25 Because of the anticipated interest in this project

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 and the wide range of external and internal  
2 stakeholders that might be interested, we are putting  
3 together a communications plan and we're planning to  
4 have a communications coordinator to help take care of  
5 those interactions and also to help with some of the  
6 other contact management. And that's going to be  
7 Laruen Killian in the Office of Research. And she'll  
8 also serve as the coordinator for the TAG, too,  
9 helping to run those meetings.

10 Outside that, of course, we have all the  
11 different technical areas and the leads and support  
12 staff for the technical work. This is the stuff that  
13 Dr. Bley mentioned we have to start getting busy with  
14 very soon here.

15 So here on these next two slides are a  
16 list of all the different -- yes?

17 CHAIR STETKAR: If you could go back to  
18 the org chart for a second?

19 MR. KURITZKY: Yes.

20 CHAIR STETKAR: You're listed as Program  
21 Manager.

22 MR. KURITZKY: Yes.

23 CHAIR STETKAR: Do I interpret that as what  
24 we used to call a principal investigator or as in a  
25 symphony, the conductor of the symphony? And who

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701



1 integrates and makes the decisions about the fact that  
2 Joe doesn't need to do the world's best fire physics  
3 modeling, and it's better for example to take a  
4 different approach in terms of scope and analysis in  
5 each of these sub-level technical issues? That's a  
6 very vital role and it's a very important day-today --  
7 it isn't a management role. It's a technical  
8 integrator, or whatever you want to call it.

9 MR. KURITZKY: Right.

10 CHAIR STETKAR: Do you do that?

11 MR. KURITZKY: Okay. I --

12 CHAIR STETKAR: Because without that --

13 MR. KURITZKY: If I was working to a  
14 consultant or contracting company in the old days, I  
15 would be the principal investigator and I'd be taking  
16 care of things like that. The nature of working for  
17 the government is there's a lot of programmatic  
18 aspects that will take a lot of your time no matter  
19 how much you try to focus on the technical.

20 So, it is my job to make those calls. I'm,  
21 of course, beholdng to my management. But because  
22 I'll be spending so much of my time doing programmatic  
23 issues even though I'll be, of course, having support  
24 with that, so I'll be spending my time between those.  
25 That's why we have the two principal technical

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 experts. That's where Marty and Mary will come in to  
2 help address and resolve those issues.

3 I will be the single point of  
4 coordination. You know, essentially they'll be making  
5 recommendations to me and, most likely, I'll just take  
6 their recommendations. I will also get input from the  
7 TAG for issues, particularly ones that are more  
8 problematic.

9 CHAIR STETKAR: And the TAG only gets two  
10 shots at it. I'm talking about, you know your project  
11 team gets together and they're struggling with what  
12 level of analysis do we do for particular fires  
13 during shutdown; somebody's got to make a decision  
14 that, you know somebody in one of the organization  
15 does less and somebody in the other part of the  
16 organization does more. Because that's the most  
17 efficient way to attack that technically.

18 MR. KURITZKY: Right.

19 CHAIR STETKAR: And those individuals both  
20 know the perfect ways of doing it and can eat up 12  
21 years of your time individually --

22 MR. KURITZKY: Right. Right.

23 CHAIR STETKAR: -- solving the problem  
24 perfectly.

25 MR. KURITZKY: Right. And that ultimately

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 will come to my decision. But because I will be:

2 (a) Just because of Mary and Marty's  
3 expertise, I would be turning to them,;

4 And also because I will also be tied up  
5 with a lot of programmatic issues, I'll be relying  
6 very heavily on them to help me make those decisions.

7 CHAIR STETKAR: I just wanted to make sure  
8 there was that --

9 MR. KURITZKY: Yes. That coordination and  
10 integration comes through the program manager,  
11 theoretically, but heavily supported by the principal  
12 technical advisors.

13 Okay. As I mentioned, that there's all  
14 these various ties. Of course, the PRA people here  
15 are very aware there is very many technical areas  
16 involved in a full-scope PRA, especially one that's  
17 expanded in terms of all the radiological sources  
18 we're looking at and all the big spectrum of hazards.  
19 And so we have a lot of positions, you know in part of  
20 the project plan, the staffing plan.

21 Now, one thing I will point out is that we  
22 kind of talk about specific positions, like PRA  
23 analyst-1 or PRA analyst-2, et cetera. But in reality,  
24 this may not be a single person. Because of the nature  
25 of the support in the Agency, we may have to get

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 people from here, someone -- but, you know, like I  
2 said that PRA analyst-1 may in fact be two or three  
3 different people each doing some of the tasks that  
4 fall under PRA analyst-1. It's ideal if we can get  
5 someone committed full time to do all those things,  
6 but it may or may not happen that way.

7 CHAIR STETKAR: Dennis and Bill brought it  
8 up before, but this is the appropriate slide since the  
9 fourth line item down on the right it says "Update  
10 SPAR model."

11 MR. KURITZKY: Yes.

12 CHAIR STETKAR: Is there some fundamental  
13 reason why you cannot use the volunteer licensee's  
14 model since they have a more complete and more  
15 realistic model of their plant than you do?

16 MR. KURITZKY: Right. There are two --  
17 and actually, this is not the best slide for it.

18 MEMBER SHACK: Especially since you said  
19 earlier that you were going to convert their model to  
20 your software.

21 MR. KURITZKY: We're going to get there.  
22 We're going to get there.

23 MEMBER CORRADINI: We are just anxious,  
24 that's all.

25 CHAIR STETKAR: I like to keep interest.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1                   MEMBER CORRADINI: We get the Chairman to  
2 stop helping you.

3                   MR. KURITZKY: That's all right. Okay.  
4 We're getting closer.

5                   The SRM for SECY-11-0089 directed the  
6 staff to explore collaboration with EPRI for the  
7 project. So within days of having that SRM hit the  
8 street, we contacted EPRI, had a teleconference with  
9 EPRI to see and explore what type of interaction and  
10 collaboration we could have. Unfortunately, EPRI --  
11 what we heard back was that there was no resources  
12 available to do any new type of work and start new  
13 projects, which includes the Level 3 PRAs. There was  
14 nothing they could do to specifically support us.  
15 However, they did discuss several of the projects they  
16 had ongoing which might have some relation to Level  
17 PRA and they would consider some type of collaboration  
18 in those activities that we thought would be  
19 beneficial.

20                   MEMBER SHACK: I mean, the industry at the  
21 meeting with the Commission sort of said, you know  
22 this is a good idea and you ought to do a PWR and a  
23 PWR. So why don't you come up with a little bit more  
24 support?

25                   MR. KURITZKY: Well, again, I don't know

1 who spoke at the Commission meeting. This is EPRI,  
2 and EPRI has got their budgets just like everybody  
3 else and their limitations thereof.

4 In any case, so we'll have to decide  
5 whether or not there are other activities that EPRI's  
6 is doing that we might be able to leverage. But as a  
7 minimum, we did get EPRI to commit there is going to  
8 be an individual from EPRI who will be on our  
9 technical advisory group. So we'll have the benefit  
10 from that as a minimum.

11 So getting on to, again, what Dr. Bley  
12 said, all this work is out here and somebody has got  
13 to start doing some real work here soon because, you  
14 know the clock is going to get used up totally. So,  
15 the first thing we have to do is, of course, is come  
16 up with a site. So, we immediately set about trying to  
17 come up with a set of site selection criteria. Again,  
18 the SRM told us work with industry to come up with an  
19 appropriate site. So we developed this set of draft  
20 selection criteria. We had a public meeting to get  
21 external stakeholder feedback on that. We then  
22 incorporated that feedback and came up with a final  
23 set of criteria. We shipped them off to NEI and said  
24 "NEI, can you please help us locate a volunteer site  
25 based on these criteria?"

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1                   And, a few weeks back we got formal  
2 notification from NEI that the Vogtle Units 1 and 2  
3 will be our volunteer site. And then before anybody  
4 asks the question, Units 3 and 4 we just recently  
5 received their Combined Construction Operating  
6 License. Those units are not part of the study. We're  
7 focusing the study on just 1 and 2 and their spent  
8 fuels pools. They actually -- I don't believe they  
9 have dry cask storage there, so we'll have to -- we'll  
10 play a little game there to map one on.

11                   Any case, so Vogtle Units 1 and 2 are the  
12 site that we're going to use. They are both  
13 Westinghouse 4-loop pressurized water reactors. They  
14 have large dry containments. They are not  
15 transitioning to NFPA 805, so they wouldn't  
16 necessarily have developed an electric cable raceway  
17 database for that, however they did do a prior PRA as  
18 part of their IPEEE and so they have at least a  
19 partial fire cable raceway database for that --  
20 electric cable raceway database for that.

21                   And my understanding thirdhand is that  
22 they are in the process of completing an updated fire  
23 PRA. So, I'm hoping that that will allow us to  
24 leverage substantial information for doing the fire  
25 code, which stood to be one of the major resource

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 sinks. It was one of the criteria that we were asking  
2 for.

3 CHAIR STETKAR: Do you happen to know, I  
4 don't, did they do a seismic PRA or do a seismic  
5 analysis so --

6 MR. KURITZKY: No, they did not a seismic  
7 PRA. Yes, they did seismic -- but on the previous  
8 slide when I mentioned about EPRI, I mentioned it had  
9 some ongoing projects that they might be able to nexus  
10 with us, they are doing a seismic PRA effort right now  
11 with Vogtle. Vogtle is the plant they're actually  
12 doing that PRA effort with.

13 CHAIR STETKAR: So they're developing  
14 plant-specific fragility and --

15 MR. KURITZKY: Here's the problem:  
16 They're doing fragilities but they're using a new  
17 innovative method to come with fragilities. It's  
18 going back to the state-of-practice concept and the  
19 fact that we have not, the NRC has not seen or been  
20 part of this innovative fragility development. So I'm  
21 not sure that that is really going to help us. But  
22 nonetheless, there should be a lot of information from  
23 that seismic PRA that hopefully we should be able to  
24 leverage to some extent anyway.

25 As far as the fragility stuff, that would

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701



1 have to wait until we see what they've done and make  
2 a call on that, you know later.

3 CHAIR STETKAR: Well, later ought to be as  
4 soon as you can if they're going to develop  
5 fragilities. That's a huge technical piece, or could  
6 be.

7 MR. KURITZKY: Right. The two biggest  
8 ones are electric cable raceway database and seismic  
9 fragilities; those were the two things obviously that  
10 we were -- that were huge --

11 MEMBER SCHULTZ: And as far as you know,  
12 EPRI is only using the new technique, not a  
13 comparative evaluation?

14 MR. KURITZKY: Yes. I don't know --  
15 that's a good question. I don't know for a fact. My  
16 impression was they were using the new technique, but  
17 I don't know to what extent they may have some  
18 existing or some other --

19 MEMBER SCHULTZ: You'd think they'd want  
20 to do to some type of comparison.

21 MR. KURITZKY: Comparison. I would think  
22 so too. I think that's a good point. I'm hoping that  
23 maybe they have something.

24 MEMBER BLEY: Because anybody you know of,  
25 anybody here, is going to follow-up what they're up

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 to.

2 MR. STUTZKE: Oh, absolutely.

3 MEMBER BLEY: Yes?

4 MR. STUTZKE: Because this is all tied in  
5 to industry's response to Recommendation 2.1.

6 MEMBER BLEY: Oh, okay.

7 MR. STUTZKE: Sure.

8 MEMBER BLEY: So that's where it's coming  
9 from?

10 MR. STUTZKE: Yes, that's where this is  
11 coming from. In fact, we had a meeting Thursday and  
12 Friday of last week with Bob Kennedy and Greg Hardy.  
13 I mean, these are all the heavy hitters in the field  
14 tied into this effort. So, I'm not greatly concerned  
15 about getting it done at some level.

16 CHAIR STETKAR: Has Vogtle done a shutdown  
17 PRA?

18 MR. KURITZKY: I don't think so. Again,  
19 all of this I'm speculating, but I do not know of a  
20 shutdown PRA.

21 CHAIR STETKAR: I was just trying to think  
22 of, you know, big technical --

23 MR. KURITZKY: Right, right, right.

24 CHAIR STETKAR: -- in the project.

25 MR. KURITZKY: Yes. And like I said,

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 that's going to be the main thing is finding out is  
2 finding out what they've done and that's going to help  
3 to determine with impacts what we have to do.

4 Okay. So here's the slide to get back to  
5 the state-of-practice. Our philosophy for the  
6 approach of the project is to base this generally on  
7 the state-of-practice. And by state-of-practice we  
8 mean tools, methods and data that were routinely used  
9 by the NRC and licensees or that has general  
10 acceptance in the PRA technical community. So, to the  
11 extent possible, that's what we're looking to do is  
12 state-of-practice. We're not looking to push the  
13 envelop here on this study because we got enough on  
14 the plant already. However that said, there are going  
15 to be some areas where we're going to be forced to  
16 kind of push the envelop because there's no state-of-  
17 practice that exists, again something we do need to  
18 come to the site. Like, for instance, multi-unit  
19 risk; very little has been done in that area but  
20 that's obviously an area that we have to put some  
21 attention to. Some significant attention to.

22 The state-of-practice methods that we're  
23 going to use, that going back to let's get busy doing  
24 some work, well the idea is to determine what methods  
25 we're going to use for the various aspects of the

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 study.

2 As part of SECY=11-0089 there was a  
3 scoping study done. Marty was the head for that  
4 scoping study. And so they looked already at various  
5 technical areas what types of approaches should be  
6 used to different parts of the PRA. So, that's going  
7 to be a starting place for us to determine what methods  
8 to use. But on top of that we're holding additional  
9 meetings with the Agency experts in the various areas  
10 to try and get their feel from them what they feel is  
11 the appropriate methods to use, you know what's the  
12 state-of-practice and what's the appropriate methods  
13 to be used for this study. And as we complete those  
14 types of discussions, we'll settle down on the exact  
15 methods we want to use for the study. And, of course,  
16 then we'll have the technical advisory group give us  
17 their input on it. And that's also something that  
18 will be good when we next meet with the ACRS, too.  
19 It's something that we would want to inform you of  
20 also.

21 Now, we'll get to the issue about the PRA.

22 So our proposal is to use NRC standard  
23 models for all aspects of the model. And we're using  
24 SAPHIRE Version 8 to do the PRA. That means using  
25 MELCOR for thermal hydraulic calculation calculations

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 and accident sequence timing and severe accident  
2 progression. That's means using MACCS2 for the  
3 consequence calculations. And that means taking the  
4 SPAR model, the Vogtle SPAR model will be the starting  
5 point of our Vogtle Level 3 PRA model.

6 What we plan to do is if we can get  
7 information from the licensee, which I'm sure we'll be  
8 able to do on their PRA, is that go and build out the  
9 SPRA model to incorporate information from the  
10 licensee's PRA.

11 The advantage to using NRC's tools for  
12 these aspects of the study is twofold:

13 (1) Is the staff who we're training up,  
14 okay, to become PRA analysts as well as trying to get  
15 the study done, are familiar with all these tools.  
16 Okay. They'll be able to use these tools.

17 The second thing is in doing the study,  
18 particularly since we're really expanding the scope  
19 and pushing a lot of areas, there may be cause for us  
20 to have to improve or expand the capabilities of some  
21 of these tools. We have direct control over SAPHIRE,  
22 we have direct control over MELCOR. So if there's  
23 something that we think we need to add or adjust or  
24 modify in the code, we can have that done. If we use  
25 an external code, we don't have that kind of control.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1                   MEMBER CORRADINI: Who is leading the  
2 Level 2 effort?

3                   MR. KURITZKY: Who is leading the Level 2  
4 effort?

5                   MEMBER CORRADINI: If you were to pick  
6 somebody that's going to watchover and make sure that  
7 MELCOR does what it's supposed to do for you, who is  
8 that?

9                   MR. KURITZKY: What individual by name?

10                  MEMBER CORRADINI: Yes.

11                  MR. KURITZKY: We have no staff name we'd  
12 want to give at this point.

13                  CHAIR STETKAR: Under Kathy's Division.

14                  MEMBER CORRADINI: Kathy Gibson, NRC  
15 staff.

16                  Okay. The reason I asked a question like  
17 that is there are certain things after NRC working DOE  
18 for the Fukushima reconstruction event have found  
19 might need improving on Level 2. And my question is  
20 are you going to -- some of us have seen a draft  
21 report out of Sandia relative to that and comments  
22 back as to what things might be needed to improve.

23                  And so my question is some of this stuff  
24 is under NRC's control.

25                  MR. KURITZKY: Yes.

1                   MEMBER CORRADINI: Even some of the  
2                   improvements are under NRC's control. To the extent,  
3                   though, that you want to -- and again, I'm careful to  
4                   say that you want what you call the state-of-the-art  
5                   versus innovative, but some of this stuff given what  
6                   I've seen in the Fukushima reconstruction can give you  
7                   some interesting differences in what you predict which  
8                   would effect your downstream effects. So that's why  
9                   I'm asking.

10                   MR. KURITZKY: Well --

11                   MS. GIBSON: Well we --

12                   MR. KURITZKY: Go ahead.

13                   MS. GIBSON: We own MELCOR. It's NRC code  
14                   that Sandia is our contractor for development of the  
15                   code.

16                   We also have under MOU with DOE we're co-  
17                   partners in that Fukushima reconstruction. So there  
18                   isn't anything that Sandia is doing either in that  
19                   reconstruction or to the code that we don't know about  
20                   or have approved.

21                   MEMBER CORRADINI: Okay.

22                   MS. GIBSON: So we'll make the decisions  
23                   about things that have been done to the code, what's  
24                   applicable to this study and what's not.

25                   MEMBER CORRADINI: Okay.

1 MS. GIBSON: But we own MELCOR.

2 MEMBER BLEY: I'm sorry to step into the  
3 managing side of this event. There was an experience  
4 in a project that involved using one of your codes, a  
5 fault tree code some years ago. And that ability you  
6 talked about was very nice because when there were  
7 weaknesses, they were able to patch up the code and  
8 make it do the things that needed to be done for this  
9 project. By the end of the project it was impossible  
10 to figure out what version of the code had been used  
11 on which calculation and a complete lost of that kind  
12 of control. And it's not going to be easy for you. I  
13 think that's one you guys really need to plan on ahead  
14 of time how you're going to keep track of that if  
15 you're going to be doing code mods as you do with the  
16 analysis.

17 MR. KURITZKY: Right, and that's a very  
18 good point. I mean, and that applies to the possible  
19 changes to MELCOR if we have to make some kind of  
20 tweaks to SAPHIRE, version control and -- you know,  
21 exactly, that's something that we have to keep track.

22 MEMBER BLEY: And the record of which one  
23 which did calculation.

24 MR. KURITZKY: Right, right.

25 MEMBER BLEY: It's hard to --



1                   MR. KURITZKY: Yes. And that's going to be  
2 a challenge. It would be nice to just pick a stopping  
3 point and say "Okay, this is the point." And just  
4 changes to the plant, for that matter. I mean, you  
5 have to pick a freeze date and say "We're going to do  
6 a study from this point forward." But there's always  
7 going to be things that change and if they're not that  
8 significant, you just don't worry about it. You might  
9 list them somewhere, but there are going to be things  
10 that are more important. And then all of a sudden  
11 you're going to say "Well, you know it makes no sense  
12 for me to do my study based on that configuration. I  
13 know the plant's changed and this is a very important  
14 change." And so you're going to have to try and track  
15 those and keep track of it.

16                   I think with the codes the same way. I  
17 mean, if there are certain aspects of the code that we  
18 come up and say "Okay, here's something we need to do  
19 and the current code doesn't do it, and we need to  
20 make a change" and now it's Version X that is going to  
21 do, then we have to clear that we used Version X minus  
22 1 for this part of the study and we used Version X for  
23 these aspects.

24                   Right, it's going to be a bookkeeping  
25 thing more than anything else. And to the extent we

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 can, we'd also like to maybe go back and check to make  
2 sure -- we might want to rerun something that we ran  
3 with Version X minus 1 using Version X to make sure  
4 that that hasn't changed it.

5 MEMBER BLEY: That's where we found  
6 problems, because you couldn't replicate results that  
7 way.

8 MR. KURITZKY: Right. So that's something  
9 we'll definitely have to keep track of.

10 CHAIR STETKAR: People have gone through  
11 exercises of converting a model developed by a set of  
12 people to a different set of software.

13 MR. KURITZKY: I'm familiar with that.

14 CHAIR STETKAR: I'm sure you are. I think  
15 you've probably been involved in doing that. That can  
16 be, as you all know, very, very time-consuming and  
17 exceedingly tedious.

18 MR. KURITZKY: Right.

19 CHAIR STETKAR: And is not necessarily a  
20 very useful training exercise for analysts taking  
21 someone's model and one set of software and trying to  
22 replicate it on another set of software is mostly a  
23 bookkeeping exercise. Analysts don't understand --  
24 don't learn about how to model systems that way or  
25 develop PRA models.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 MR. KURITZKY: They do learn from it.  
2 It's not the most effective training mechanism, but I  
3 believe they would learn doing that.

4 CHAIR STETKAR: I was just thinking in  
5 terms of, you know resource allocation --

6 MR. KURITZKY: Right.

7 CHAIR STETKAR: -- and satisfying this in-  
8 house training bullet.

9 MR. KURITZKY: But I would counter that,  
10 just taking the licensee's model and using that  
11 doesn't give them a lot of training either.

12 CHAIR STETKAR: It doesn't just using it  
13 either, but taking an existing model and looking at  
14 systems and saying "Hey, I think they level out here,"  
15 and punching up that model, spending an hour to do  
16 that is much more useful training exercise than  
17 copying -- you know, oh I need this basic event for  
18 this valve here, and this basic event for this pump  
19 over here, and oh, they left out a failure mode, you  
20 know.

21 MR. KURITZKY: Right. But, you know I'm  
22 not an expert on what's in all the SPAR models, but my  
23 understanding is there is going to be certain  
24 components that may not be included in the SPAR model,  
25 so it'll have to be added in the licensee -- there are

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 certainly going to be initiating events that event  
2 trees will have to constructed --

3 CHAIR STETKAR: Okay.

4 MR. KURITZKY: -- that were not in the  
5 licensing PRA. And that is a training exercise for  
6 people. It's not the same as having someone sit down  
7 and do it from scratch of course, but there is a  
8 training value there. But again, it's a resource  
9 expanded in doing that that you could be expending  
10 doing something else, I'll grant you that.

11 CHAIR STETKAR: That's the issue.

12 MR. KURITZKY: Right, that too. But again,  
13 I go back to the two other things is that this Agency  
14 has a whole slew of PRA experts and PRA activities, a  
15 nd PRA programs, within programs that are focused on  
16 SAPHIRE and SPAR. So, that's the Agency's tools and  
17 it doesn't make a lot of sense to try and force us to  
18 go use a different tool and a different model when  
19 that's not the tools and models we're using going  
20 forward.

21 And again, like I said, we have creative  
22 control essentially over those models and those tools  
23 which we would not have with someone else's.

24 The point you raise is also something  
25 being raised internally also. It's an issue that has

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 popped up.

2 CHAIR STETKAR: And it's probably  
3 preliminary, do they have a Level 2 PRA? I mean, does  
4 Vogtle have a Level --

5 MR. KURITZKY: Again, the state of  
6 information from them --

7 CHAIR STETKAR: -- MAAP versus MELCOR and  
8 all that kind of stuff. Do you need to review --

9 MR. KURITZKY: Right, right.

10 CHAIR STETKAR: -- analyses that have  
11 already been done in MELCOR?

12 MR. KURITZKY: Right. I have a feeling --  
13 if I were to guess, I would guess they have done MAAP  
14 analyses on those things and we'd probably want to do  
15 some audit calculations or something using MELCOR.  
16 Hopefully not to have to redo all of the work that's  
17 been done, but just to do enough to make us feel  
18 comfortable. And then given the scope of the study,  
19 there's be obviously new calculations we'll have to  
20 run specific for our scope.

21 CHAIR STETKAR: Yes, I'm certain there is.

22 MR. KURITZKY: Right.

23 Okay. The risk metrics that we plan to  
24 report for the study, the standard risk metrics in  
25 terms of public health effects that we're all familiar

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 with. The number of latent fatalities, you know early  
2 fatalities, latent fatalities, individual early  
3 fatality risk, latent fatality risk as well as  
4 population doses at certain doses distances away from  
5 the plant.

6 So, essentially whatever metrics we can  
7 get out of the current MACCS is what we're going to  
8 MACCS2 will be using for the study.

9 The same with economic cost information.  
10 Again, you guys heard a lot this this morning with the  
11 spent fuel pool study about what kind of metrics that  
12 MACCS has. Now granted, MACCS is going through some  
13 changes. Again, Kathy Gibson and under her Division  
14 she's quite aware of the work that's being done there  
15 as far as improving the economic cost model and some  
16 other things in MACCS.

17 Our intention going back to this whole  
18 idea of version control, we're going to pick a point  
19 and we're going to say "Hey, we need to use MACCS, we  
20 need the version of MACCS that is available right now  
21 and there may be other stuff that you can make it  
22 better later," but we have to obviously take a point  
23 and say "Now we're going to use MACCS." And it's not  
24 just a question so much in my mind of just whatever's  
25 in MACCS at the time we need to use it, but whatever

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 is in MACCS and it's been shaken out. You know, just  
2 because the feature's got put in there, if it hasn't  
3 really been vetted, then I don't necessarily want to  
4 be standing up and presenting results from that.

5 MEMBER CORRADINI: How was that vetted in  
6 the past? How do you know it's been vetted?

7 MR. KURITZKY: That's a good point. I  
8 don't know. Honestly, I don't get involved with MACCS  
9 so I don't know what the whole QA process and V&V  
10 process of MACCS.

11 MEMBER CORRADINI: Because, I mean, you  
12 know my simple mind says what experiment am I going to  
13 compare it to know that it does right?

14 MR. KURITZKY: Even other codes, yes.

15 MEMBER CORRADINI: Well, yes, well that  
16 gets me a bit nervous. But at least I'm trying to  
17 understand what determines vetting.

18 MR. KURITZKY: Oh, I'm sorry.

19 MR. HELTON: Don Helton, Office of Nuclear  
20 Regulatory Research.

21 The answer is it depends on exactly which  
22 part you're focused on. Keep in mind that unlike  
23 MELCOR or MELMACCS -- you know Level 2 -- but MELCOR  
24 versus MACCS, versus some other code in Level 3 space  
25 MACCS2 was used almost exclusively internationally by

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 both the NRC licensees and international stakeholders.  
2 It's a widely used code. So it's been vetted in the  
3 sense that it's been used for a variety of different  
4 purposes by a variety of different people.

5 In terms of more of a validation context,  
6 again, it depends on what you're focused on. But for  
7 example in the area of atmospheric transport and  
8 dispersion there were some comparison studies that  
9 were done between MACCS2 and Lawrence Livermore's  
10 NARAC suite of codes. So there have been where there  
11 has needed to be focused validation that's taken  
12 place.

13 MEMBER CORRADINI: So, can I ask kind of  
14 digression question? So, I just assume that MACCS is  
15 part of MELCOR. You talk as if it's separate. Isn't it  
16 integrated so that if you start a run, you can  
17 essentially start with some initial boundary  
18 conditions, initial incidents and go all the way to  
19 source term release?

20 MR. HELTON: MELCOR And MACCS2 are two  
21 distinct pieces of software, but there's an interface  
22 between them that's called MELCACCS which basically  
23 automates and facilitates the process of going from  
24 the output of MELCOR to the input of MACCS2.

25 MEMBER CORRADINI: So one final question.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701



1 So in SOARCA that utility was used in terms of the  
2 draft report some of us might be happy to read.

3 MR. HELTON: The MELMACCS interface --

4 MEMBER CORRADINI: Yes.

5 MR. HELTON: I would assume so, yes.

6 MEMBER CORRADINI: So what I hear is the  
7 answer is pieces have been checked against other  
8 pieces, but in terms of some sort of integrated  
9 vetting, not possible?

10 MR. HELTON: I'm not going to say not  
11 possible, but I mean that it's been -- just like we  
12 don't go out and melt down cores intentionally to  
13 validate --

14 MEMBER CORRADINI: Well, there have been  
15 you know where I'm going with this, right?

16 MR. HELTON: Yes, I mean there have been  
17 tests and --

18 MEMBER CORRADINI: So let me just ask my  
19 question straight up. Has NARAC and MACCS been  
20 compared for the same source term input for Fukushima?

21 MR. HELTON: I don't know.

22 MEMBER CORRADINI: Because I know there's  
23 a NARAC calculation. It's OUC, but I know it's there.  
24 And I'm curious about that compared to RASCAL,  
25 compared to MACCS.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 MS. GIBSON: We're working on those.

2 MR. HELTON: The answer --

3 CHAIR STETKAR: You have to come up to the  
4 microphone so we can get it on the record.

5 MS. GIBSON: Yes. We've started looking at  
6 post-Fukushima improvements to RASCAL and MACCS and  
7 NARAC.

8 We've just started a conversation between  
9 the Office of Research and NSIR.

10 CHAIR STETKAR: Okay. Just for the  
11 record, make sure he's got your name.

12 MS. GIBSON: Kathy Gibson.

13 CHAIR STETKAR: Thank you.

14 MR. HELTON: The other point I'd like to  
15 make along that same lines is let's keep in mind these  
16 codes comparisons can be important and useful for  
17 validating or giving confidence on certain parts of  
18 the model. But tools like these MACCS2 and RASCAL the  
19 ones here, have different purposes and they're going  
20 to solve slightly different problems.

21 MEMBER CORRADINI: Sure.

22 MR. HELTON: You should keep that in mind  
23 when we're giving those comparisons.

24 MEMBER CORRADINI: I understand that. I  
25 just kind of launched of about what's vetted and not

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 vetted in these tools. And from my perspective until  
2 I see an experiment, nothing's vetted.

3 CHAIR STETKAR: I think some of this  
4 discussion is really pertinent to kind of the question  
5 I asked earlier in terms of how are you organizing in  
6 terms of how are you organizing the project  
7 technically. If I think of organizing a project what  
8 I call horizontally, in other words taking a full  
9 power Level 1 internal event PRA and taking it out all  
10 the way through Level 3 --

11 MR. KURITZKY: Yes.

12 CHAIR STETKAR: -- as a prime task --

13 MR. KURITZKY: Yes.

14 CHAIR STETKAR: -- you need to start  
15 making decisions about some of these tools  
16 immediately. Because they have to be ready to handle  
17 that versus organizing the project vertically where  
18 you say "Well, I'm going to do all the Level 1  
19 internal stuff, I'm going to do boil-off calculations  
20 on the fuel pool; now we'll worry about all this other  
21 stuff later." That's really important, because you  
22 don't want to be using two different versions of MACCS  
23 in year 1 and year 2½ to look at consequences of fuel  
24 pool versus consequences of, you know core damage  
25 internally. Full power core damage events, for

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 example.

2 MR. KURITZKY: Right.

3 CHAIR STETKAR: And that is a technical  
4 issue.

5 MR. KURITZKY: Right. And the reality is  
6 that because there are so many pieces, the odds of us  
7 being able to get -- we're not going to do everything  
8 up front and some of the stuff we're going to learn as  
9 we go forward. And so there's going to be an interim  
10 piece to this regardless of which path or paths we  
11 stake out to begin with. But again, those are good  
12 points to keep in mind. I mean, that's going to be the  
13 challenge.

14 CHAIR STETKAR: I mean, it is important to  
15 freeze, you know versions of code --

16 MR. KURITZKY: Right.

17 CHAIR STETKAR: -- pieces of information  
18 so that right, wrong or indifferent by the time you  
19 get done with the entire project, you can at least --  
20 you know where it came from.

21 MR. KURITZKY: Right.

22 CHAIR STETKAR: And if you identify some  
23 deficiencies in codes or whatever that need further  
24 improvement, you at least have a consistent benchmark,  
25 you know a baseline let's say you know to start with

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 where you're not moving the process continually.

2 MR. KURITZKY: Right.

3 MEMBER SCHULTZ: It appears as if this is  
4 where you're going. But if you have that strong basic  
5 optimistic plan going forward as to how the pieces  
6 going to fit together ideally, then as you run into  
7 issues that need to be addressed differently you can  
8 document those and understand what the differences  
9 are.

10 MR. KURITZKY: Right.

11 MEMBER CORRADINI: And if I just might  
12 say, I'm not meaning this from a critical standpoint.  
13 It's just I'm kind of with John. It just seems there's  
14 a whole bunch of little beasties that you got to get  
15 ordered in a row horizontally to get ready for when  
16 you want to turn one on, it actually is ready for  
17 prime time. That's my kind of -- I wanted to kind of  
18 understand where I was asking about Level 2 and Level  
19 3 particularly tools. That's all.

20 MR. KURITZKY: Right. And I think  
21 therefore, and I'm not a Level 2 or 3 expert, but I  
22 mean but I think that most the tools that we want to  
23 use are there and are ready to be used. There's  
24 always things that are changing and improving. MACCS  
25 economic model is being changed and improved. MELCOR

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 may -- there's a list of things that can be improved.  
2 And if you get real life events that can be used to  
3 benchmark certain things, there's always the potential  
4 for changes and improvements there, too.

5           So, we would expect that there would be  
6 adjustments to the codes. To the extent we can have a  
7 freeze date and use a certain version, we will. When  
8 we feel it's necessary to move to a different version,  
9 even if it's midstream, if we have to do it, we have  
10 to do it and we have to document carefully what we've  
11 done as we discussed. We may have to do some back  
12 calculations to make sure we haven't totally changed  
13 something. But I think in general we have the idea  
14 that the tools we want to use and how we want to do  
15 things. Where it gets a little bit more tricky is the  
16 fact that we're putting in things like spent f pools  
17 and stuff that, I should say for a reactor and a  
18 typical PRA, we have an idea of what we want to do.  
19 When it gets into the issue of spent fuel pools and  
20 some of these other things where we don't have as much  
21 experience, there's obviously more concern over those  
22 types of interactions and how it would impact the  
23 versions of codes and tools that we use. And that's  
24 something we're going to try to lay out as best we can  
25 up front. But again, as I mentioned, we're not going

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 to envision everything up front and we're going to  
2 have to adjust it as we go forward.

3 CHAIR STETKAR: Sure. Sure. I understand.

4 MR. KURITZKY: But I appreciate the  
5 feedback. Obviously, important issues.

6 Okay. So going back to the risk metrics.  
7 Besides economic costs and the public health effects,  
8 we also are going to use a report core damage  
9 frequency and large early release frequency just  
10 because those are the standard metrics that get used

11 Commission, approved surrogates for the  
12 QHO, the Quantitative Health Objectives, and so we'll  
13 also calculate and report those.

14 Okay. As if there weren't enough  
15 challenges that people have been discussing already--  
16 go ahead, yes?

17 CHAIR STETKAR: Make sure you understand  
18 what core damage is during shutdown?

19 MR. KURITZKY: Right.

20 CHAIR STETKAR: And what means --

21 MR. KURITZKY: Right. Right. And in some  
22 cases -- right. It could be fuel damage, whatever, the  
23 metric is there. And that's one of the things we're  
24 going to get to when we talk about some of the key  
25 challenges is the common end states and metrics. But,

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 yes, that's going to be a different beast.

2 Okay. So getting onto the topic of key  
3 challenges. We have, as we mentioned, there are a lot  
4 of technical areas involved in this full scope study.  
5 So there's a lot of areas that we have approaches and  
6 methods, kind of off the shelf, that can be used  
7 fairly readily. They're in the areas that we have to  
8 do some improvements or some tinkering or some major  
9 changes or improvements.

10 Most of the tasks that we're going to  
11 pursue probably given the broad scope, we're going to  
12 need some level of attention. And we've categorized  
13 it into for color coded categories. The reason I have  
14 color codes here is because in the actual plan there's  
15 a matrix that shows all these little elements and they  
16 all have different colors in the matrix. The only  
17 colorful thing we have in the whole plan. So that's  
18 why we have those colors called here.

19 Green -- and it's not to confused with the  
20 ROP colors other.

21 MR. KURITZKY: Well, that's why I was  
22 thinking that the ROP colors would have been a perfect  
23 mapping, so --Right, right, right. But these are  
24 green, yellow, orange red --

25 CHAIR STETKAR: Slight different shades?

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701



1 MR. KURITZKY: Right, exactly. These are  
2 pastels.

3 So green we have a consensus that we can  
4 pretty much just pull of the shelf and run with it .  
5 Those are the ones that we really don't have to worry  
6 about. They're established, they're state-of-practice  
7 and we can just go ahead and use them.

8 The yellow methods are those that are  
9 probably a minimum amount of work if we do a slightly  
10 improve the method that's out there or just to pick  
11 between several methods that are probably all okay,  
12 but we have to pick one and justify why we want to use  
13 that particular one. So that will be a minimum amount  
14 of effort involved.

15 The orange methods are those that would  
16 probably require a moderate amount of effort, you know  
17 taking probably what is an existing method but using  
18 it for a different application and therefore there's  
19 going to have to be, obviously improvements or changes  
20 to make it work for that other application.

21 An example that we have there is if you  
22 take a human liability analysis method that, for  
23 instance, we have for internal events or internal  
24 fires but now we want to apply it to something else  
25 like post-core damage or seismic events, we're going

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 to have to do some type of transformation to make it  
2 work for that context.

3 The red items are those where actually a  
4 new method development is going to be necessary. Those  
5 are the ones that are going to be the biggest resource  
6 . And the perfect example there is addressing multi-  
7 unit risk.

8 The next couple of slides I'm going to  
9 actually go over a few of the ones that are the red  
10 and orange items, the ones that are the biggest  
11 challenges to the project.

12 The modeling of site risk is number one.  
13 That's the one big red item that we have. Current  
14 models, PRA models don't consider multi-unit effects,  
15 their accidents between different units on the site or  
16 the fact that things that are happening in the spent  
17 fuel pool could impact the reactor and vice versa. So  
18 there's a lot of areas that we're going to have to  
19 explore how to address in this whole multi-risk issue.

20 Initiating events, equipment and operator  
21 actions that are common to multi-units or common to  
22 multi-units and/or spent fuel pools, and/or dry casks.  
23 You could think of seismic event as we heard about  
24 this morning. You know, that's obviously an impact to  
25 reactors and it's going to impact the spent fuel pool

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 and the dry casks. So, there are these events that  
2 could impact across the board in other actions. If  
3 you're taking some of action and you have one  
4 radiological source at the site, how does that impact  
5 your ability to address things happening at another  
6 part of the site?

7           There's also going to be the damage and  
8 the radiological release effects. Think of Fukushima.  
9 I mean if you have a bunch of radioactivity released  
10 from one of these sources, that's going to have a  
11 definite impact on your ability to respond and prevent  
12 a deteriorating situation at other radiological  
13 sources on the site.

14           On top of that is the idea of trying to  
15 get one integrated risk picture. So, we want to be  
16 able to put all of these in one kind of common  
17 integrated risk platform, so we have to be able to put  
18 these models together. That goes to -- you know you  
19 were just saying, Doctor Stetkar, about core damage  
20 frequency and full power versus shutdown and damage in  
21 the pool versus in the reactor --

22           CHAIR STETKAR: And your ultimate metrics  
23 in terms of health effects and --

24           MR. KURITZKY: Right. Right. But if  
25 anything less than that, and also just trying to get

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 things on to some kind of common platform.

2 And the last bullet there, doing the  
3 uncertainty analysis for that, too. That was as  
4 discussed this morning, too, for spent fuel pool, too.  
5 That's a big issue.

6 Okay. So that's probably our biggest  
7 challenge with the study.

8 A couple of other areas that are going to  
9 be somewhat significant challenges are spent fuel PRA  
10 technology. That's an area that has not had nearly  
11 the attention that reactors have. There have been risk  
12 analyses done for spent fuel, both in pools or in  
13 storage casks in the past. There was work done for  
14 spent fuels for decommissioning power plants a while  
15 back and there's the dry cask PRA that was sponsored  
16 by the NRC. And EPRI did like a PRA, I think, of both  
17 its storage casks. So there's been a number of  
18 studies of nuclear materials of safety and safeguard,  
19 and NMSS has done various transportation and storage  
20 risk analyses. And there's been several other storage  
21 studies, you know further back in the years to look at  
22 various pieces. All these things have looked at  
23 various pieces of the risk picture, but never looked  
24 at an integrated risk picture for the spent pool fuel  
25 or for the dry cask. So there's going to be areas of

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 that risk analysis that are going to have to be  
2 developed or improved, or upgraded. Areas dealing  
3 with success criteria determination, human reliability  
4 analysis, you know severe accident phenomena, you know  
5 accident phenomena.

6 So, there are a lot of things that are  
7 going to take a lot of work. The study you heard about  
8 this morning, the spent fuel pool scoping study is  
9 going to look at several of those things in some  
10 degree, in some level. But it's not, again, going to  
11 be a full risk, as we discussed this morning -- not  
12 going to be a full risk analysis. So there's going to  
13 be a lot more work that has to be done for that.

14 The other big orange item that we have is  
15 HRA. As I just mentioned a few moments ago we have  
16 pretty much established HRA methods for reactors at  
17 full power dealing with internal events and now  
18 dealing with internal fire. And, in fact, there is  
19 SRM and 061020 several years back told the staff to go  
20 ahead and come up with -- because there's no many  
21 different HRA approaches, to come up with one approach  
22 that you'd recommend to be applied in all cases or if  
23 that can't be done, at least guidance on which  
24 approaches to use in which situations. That's an  
25 ongoing effort. We hope to be able to use work from

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 that project in this study, but it depends on where it  
2 stands vis-à-vis the schedule for our study. We  
3 can't, obviously, hold our study up while we wait for  
4 some kind of output to come, so we will use it to the  
5 extent that it's available and can be used. But that,  
6 again, for internal events.

7 For external events like earthquakes or  
8 for shutdown and low power modes of operation, or for  
9 particularly post-core damage actions we don't have  
10 established methods. So we're going to get, as I  
11 mentioned, you either have to use the SRM method, as  
12 it was called, or some other existing method and try  
13 and morph it over to be used for those applications,  
14 or you know try some other type of approach to at  
15 least, you know in summary incorporate the different  
16 effects that those conditions would have on operator  
17 actions as opposed to just internal events.

18 For post-core damage it's particularly  
19 vexing because the types of actions that the operators  
20 have to take under the Severe Accident Management  
21 Guidelines or the Extensive Damage Mitigation  
22 Guidelines often times are knowledge-based rather than  
23 rule-based. So the evaluator, the decision maker, he  
24 has to use his knowledge and his problem solving  
25 skills to try to come up with an appropriate course of

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 action under very unfamiliar circumstances and such  
2 that they led to at times where there's no clear cut  
3 single correct course of action. And there's going to  
4 be risk trade-offs. Whatever action you take to try  
5 to address something, you know that it may have a  
6 deleterious effect on something else. And so it's a  
7 type of situation where that the current state of  
8 practice HRA method doesn't really address. So that's  
9 another potential area of concern.

10 The last list of the key challenges, this  
11 is just kind of a laundry list of various items.  
12 These aren't quite as -- should hopefully not be as  
13 significant of concerns as the ones I've just  
14 mentioned, but they were various things that we  
15 probably just can't grab something off the shelf and  
16 run with; there's something that we have to do here.  
17 We have to either improve something, make sure it  
18 works with the application we want, pick between sort  
19 of things, slightly improve things, whatever. But  
20 there all are existing Research activities, other work  
21 being done for many of these.

22 For instance, for Level 2 and 3 PRA  
23 uncertainty analysis, as you heard this morning,  
24 SOARCA is doing some work in that area. So we would  
25 tend to pool our leverage, whatever comes out of the

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 SOARCA work in that area.

2 Under the Memorandum of Understanding that  
3 Office of Research has with EPRI, there's work being  
4 done about integrating support system initiating event  
5 models into the PRA. So we can leverage that work.

6 A recent NRC-sponsored research on the  
7 conditional steam generator tube rupture, we could  
8 take advantage of that work.

9 Going to the electric cable raceway  
10 database, as we mentioned before, the plants are  
11 producing to NFPA 805 obviously are coming up with  
12 databases. Even the plants that are not doing NFPA  
13 805 that have fire PRAs or as part of their Appendix  
14 R-rated efforts, may have completed partial electric  
15 cable raceway databases.

16 As we mentioned specific for Vogtle, like  
17 I said, my understanding is they've done an updated --  
18 they certainly did a PRA for IPEEE a fire PRA. My  
19 understanding is they've done an updated one right  
20 now, and so I'm hoping that we'll have fairly good  
21 cable raceway data, location data for that plant.

22 Seismic fragilities is one, again, EPRI's  
23 doing this work with Vogtle. I don't know where that  
24 stands, but we might have to -- just pour over  
25 whatever particulars they have. I'm hoping that we

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701



1 will have something that we can at least make partial  
2 use of.

3 Severe accident progression modeling is  
4 one that's clearly gotten a lot of attention. Again,  
5 I mention SOARCA. SOARCA's done a lot of work on that  
6 in the recent years. There's a lot of improvements in  
7 that area.

8 We also have two other research projects  
9 that are ongoing right now that we can leverage. One  
10 is the SPAR integrated capabilities Modeling Project,  
11 which is looking at going through severe accident  
12 progression modeling in Level 2. And there's also an  
13 advanced Level 2 PRA project that is ongoing in  
14 Research right now also. So, we would hope to get  
15 additional information on severe accident modeling  
16 from those efforts.

17 MEMBER SKILLMAN: Alan, how do you choose  
18 which of these you incorporate?

19 MR. KURITZKY: These, we have to pick all  
20 of these, it's a question of how much effort we have  
21 to do in order to incorporate them.

22 So, the previous ones I talked about with  
23 the orange and red ones, there's a lot of effort  
24 involved. These, I don't remember. Yes, these are  
25 probably like the yellow items or something. I don't

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 remember exactly how they fall out. But these are  
2 ones where, you know we want to address all these  
3 things. There shouldn't be major research efforts  
4 that we need to do to be able to address these things.

5 MEMBER SHACK: But there's a lot of work.

6 MR. KURITZKY: What's that?

7 MEMBER SHACK: They could be a lot of  
8 work.

9 MR. KURITZKY: Right, and it adds up. And  
10 again, that goes back to what Rich said in the very  
11 beginning. We have X amount of resources and a time  
12 frame to get this work done. And some things we're  
13 going to do very well, some things we're going to do  
14 as good as we can given what's available to us. And  
15 other things we're not going to be able to address.  
16 But these we're hoping to be able to address to some  
17 degree, all of them.

18 CHAIR STETKAR: Alan, I think there's  
19 really challenges here.

20 One thing I wanted to ask you that sort of  
21 popped up in its absence and it's sort of a related  
22 item is if Vogtle has not done a shutdown PRA, why  
23 does the whole topic of shutdown PRA not appear as an  
24 orange?

25 I mean, you spent a lot of attention on

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 things like initiating events that can effect two  
2 units at a multi-unit site. You spent a lot of  
3 attention on fuel pool type risks. And I don't see  
4 shutdown PRA. The staff doesn't have any experience  
5 having done shutdown PRA.

6 MR. KURITZKY: We have some experience  
7 with shutdown PRA. But, actually, I want to correct  
8 myself. I--

9 CHAIR STETKAR: The operational data here  
10 is the easy part because you go to Vogtle and say, you  
11 know "Give us your last two or three refueling outages  
12 timelines.

13 MR. KURITZKY: Right. I don't think these  
14 are all yellow items. I think actually some of these  
15 are orange items also. The shutdown, I believe  
16 shutdown PRA is one that we would categorize as  
17 orange.

18 CHAIR STETKAR: Okay. The reason I asked  
19 about it is it wasn't on your orange -- most of the  
20 things here --

21 MR. KURITZKY: Quick flash. There are  
22 other orange besides --

23 CHAIR STETKAR: Okay.

24 MR. KURITZKY: No one saw that.

25 Anyway, yes, so --

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 CHAIR STETKAR: I was just thinking in  
2 terms of both -- partly in terms of resources, you  
3 know personnel, but also in terms of struggling with  
4 technical issues. For example, identifying plant  
5 operating states, looking at matrices, you know how  
6 you going to handle operational conditions  
7 configurations and planned maintenance, for example,  
8 an overlay. It's not particularly thrilling from the  
9 Research point of view, but you can burn up a heck of  
10 a lot of person-hours doing that.

11 MR. KURITZKY: Yes.

12 CHAIR STETKAR: And it comes back -- you  
13 know, again it has some reflection on this you know  
14 how do you organize the project in terms of technical  
15 skills, horizontally versus vertically, you know in  
16 terms of project time?

17 MR. KURITZKY: I would be the first to  
18 admit that this project has way too many degrees of  
19 freedom.

20 CHAIR STETKAR: I does. But, I mean the  
21 real challenge, you know all facetiousness aside, the  
22 real challenge is if there is risk of not being able  
23 to complete the full scope of work within all of these  
24 degrees of freedom, I keep coming back to saying well  
25 saying that you accomplished 75 percent of everything

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 you'd set out to do on all of the tasks may not be as  
2 good as saying "We did a 100 percent of the work that  
3 we set out to do on 75 percent of the tasks." And if  
4 you're not careful about putting together the  
5 technical tasks, you might be somewhere, you know  
6 woefully in between those things that could be  
7 troublesome.

8 MR. KURITZKY: No, that's a very valid  
9 point. And, you know, again we discussed that at the  
10 informal meeting. And that's something that --

11 CHAIR STETKAR: That's one of the reasons  
12 I brought it up.

13 MR. KURITZKY: Right. And we should get  
14 it on the record. And that it is something that we're  
15 going to consider when we try to lay these things out  
16 is making sure that there are ten things, that we have  
17 ten products that we have going forward.

18 CHAIR STETKAR: Yes. In terms of I'll try  
19 to think about big holes technically that you might  
20 discover as you learn more about what's available from  
21 the existing level of PRA versus what you need to  
22 build.

23 MR. KURITZKY: Right. Right.

24 MEMBER SCHULTZ: And it seemed like the  
25 issue would appear for the fire PRA aspects. As you

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 mentioned, Vogtle has not put a lot of effort into  
2 that at this point and that's another area where there  
3 might be a lot of issues --

4 MR. KURITZKY: Right. My understanding is  
5 that they actually have.

6 CHAIR STETKAR: I was taking that at face  
7 value hoping that his optimism was well-founded there.

8 MR. KURITZKY: Right. Right. I heard  
9 that someone went down for the peer review for the  
10 fire PRA just recently, so I'm taking that to mean  
11 that they must have had some recent, you know  
12 hopefully decent quality PRA, fire PRA that they've  
13 done.

14 CHAIR STETKAR: But they're not  
15 participating in NFPA 805.

16 MR. KURITZKY: No. They're not planning as  
17 far as I know to transition over to NFPA 805.

18 MEMBER SCHULTZ: That's what caught my  
19 ear.

20 MR. KURITZKY: Yes. I can't answer that  
21 question. But I'm just hopeful -- I'm optimistic that  
22 there is a quality fire PRA that we can leverage.

23 But going back to, what you mentioned, the  
24 low power shutdown. There are aspects of low power  
25 shutdown that we understand pretty well as far as

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 modeling. There have been low power shutdown studies  
2 that have been done. And there's certain aspects, the  
3 operational data and HRA that we know are weak areas  
4 that need work. But there's some of the standard  
5 stuff, there's work involved, it's not simple, it'll  
6 take time but it's not necessarily innovative  
7 approaches. I mean, it takes time.

8 CHAIR STETKAR: No, that's as I said. It's  
9 not particularly stimulating from a research  
10 perspective.

11 MR. KURITZKY: Exciting.

12 CHAIR STETKAR: But there could be a  
13 fairly large amount of work --

14 MR. KURITZKY: Right.

15 CHAIR STETKAR: -- required to build the  
16 models. And decisions made about scope of those  
17 models, you know, scope of plant operating states; how  
18 do you treat all of that kind of stuff --

19 MR. KURITZKY: Right.

20 CHAIR STETKAR: -- when you do the  
21 shutdown? And that, again, ought not to be discounted  
22 simply because it hasn't risen to the top in terms of  
23 sort of challenging issues from a research  
24 perspective, kind of MACCS or MELCOR or, you know that  
25 kind of thing.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 MR. KURITZKY: Right.

2 CHAIR STETKAR: To get the study done, you  
3 still need to do all of that knuckle-dragging crunch  
4 work.

5 MR. KURITZKY: Right. Exactly. But again,  
6 going back to what Rich said before, is there are  
7 things we're going to do very well, there are things  
8 we're going to do to the extent we can, the things  
9 we're going to have to go into, you know that might do  
10 as a good as we can on the shutdown PRA. But that  
11 means that we have to -- that means we can look at X  
12 number operating -- you know, it's going to be a  
13 question of binning and everything in PRA. You know,  
14 how fine do you make your increments and your bins, et  
15 cetera. So, if we have to do a more course binning  
16 verses a very fine binning, so be it. But I can make  
17 it as fine as we can, as fine as we can. But when we  
18 get into it, we'll see exactly how much we need to do  
19 and what we can get away with, how much we can  
20 accomplish.

21 CHAIR STETKAR: Yes, yes.

22 MR. KURITZKY: Okay. So going to  
23 milestones. Again, as I mentioned, this is a very  
24 high level plan. We haven't really done a lot of  
25 detailed timelining and what's going to get done,

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701



1 when. We don't know the level of effort for many of  
2 the tasks because we don't know exactly what work is  
3 already available at Vogtle. So, in the plan itself  
4 there's a whole list of milestones, interim  
5 deliverables that deal with many of the tasks of the  
6 study, but the only dates that we really have out  
7 there are dates for the peer reviews.

8 As I mentioned before, we're planning to  
9 have an ASME Level 1 and LERF PRA standard style peer  
10 review, and that would be based on our schedule to have  
11 done within two years, which would make it 2014. And  
12 then to complete the actual draft NUREG report for the  
13 whole study in the fall of that year, which would then  
14 allow us to go forward with the complete peer review.  
15 SO that's essentially 2½ years with what we were  
16 talking about.

17 And again I can't stress enough that we  
18 have such a broad scope with this study, there's so  
19 many things we have to look at. And again, as we were  
20 just mentioning, Dr. Stetkar, to many degrees of  
21 freedom and all the different things we have to look  
22 at, you know it's a Rubik's Cube on steroids as far as  
23 all the different directions you can look at in terms  
24 of operating states and initiators and level of PRA,  
25 1, 2 3, et cetera. We don't really have a lot of

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 flexibility to handle new issues, so the external  
2 influences can easily impact our schedule.

3 And examples of that, just as we talked  
4 before, this whole unified SRM approach to HRA. If we  
5 want to use that, it needs to be ready when we need to  
6 use it, otherwise it can throw us off and we have to  
7 go a different direction.

8 A SRM came out recently on SECY-11-0172  
9 which was on expert elicitation. And it told the  
10 staff to go ahead and come up with expert elicitation  
11 guides and pilot with the Level 3 PRA. Well, depending  
12 on how the staff responds to that SRM, that could have  
13 deleterious effects on our schedule. So, it's  
14 something we have to be very cautious of.

15 Fukushima clearly is a wild card. There  
16 is all kind of ways that Fukushima, response to  
17 Fukushima can impact us directly and indirectly.

18 Directly I think of scope creep. I think  
19 that things coming out of the Fukushima they say  
20 "Okay, we want this to be addressed in a Level 3 PRA,"  
21 and those are going to just sink us, you know like  
22 putting weights on you while you try to swim. You  
23 know, it's just going to sink us.

24 MEMBER CORRADINI: Are you allowed to say  
25 no?

1 MR. KURITZKY: It depends how we're asked.  
2 But so far some issues have been raised that maybe  
3 potentially could be addressed in Level 3 PRA. We  
4 have successfully argued that they didn't really  
5 belong in a Level 3 PRA and have been able to keep  
6 them out of our scope. But, you know as time goes on  
7 we'll see how successful we are at manning the  
8 ramparts.

9 MEMBER CORRADINI: So not to be flip about  
10 it, but let me ask it differently. These would come  
11 from user needs within NRO and NRR?

12 MR. KURITZKY: Or they could come from the  
13 Commission. They could come directly from the  
14 Commission. They could come out of the --

15 MEMBER CORRADINI: They could -- I'm  
16 sorry.

17 MR. KURITZKY: -- what was it? The JLD was  
18 it?

19 MR. CORREIA: For example, we have a USRM  
20 that came out of the Fukushima effort -- the PRA  
21 methodology for seismically induced fires and floods.  
22 I only have so many analysts that can spell that and  
23 it's going to possibly impact Alan's work.

24 CHAIR STETKAR: On a lot of these things,  
25 again, you know it's internal within the staff. But

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 without having a fully integrated baseline risk model,  
2 you know saying that while we can try to address some  
3 of these other things, this is -- you can say that,  
4 but:

5 (1) You have to have a fully integrated  
6 risk model that you can then, you know lay onto that  
7 model some of these other issues. Because, you know  
8 without a model that handles seismic events and a  
9 pretty decent fire model for all modes of operation,  
10 you know the issue of seismically induced fires  
11 becomes somewhat nebulous, for example.

12 So, in terms of those other somewhat  
13 distracting kind of issues, you know your ambitious  
14 schedule to achieve that fully integrated Level 3 PRA  
15 model ought to have highest priority, I would think.  
16 Because, you know --

17 MR. KURITZKY: We appreciate your support.

18 MR. TALLY:

19 CHAIR STETKAR: -- partially you're  
20 addressing some other issues, there's only that.

21 MEMBER CORRADINI: I guess I'm in  
22 agreement with John. To the extent that you're going  
23 to talk to us in milestones, some of us might be more  
24 than willing to help man those ramparts.

25 MR. KURITZKY: And we definitely

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 appreciate that because we're trying to remain  
2 vigilant.

3 MEMBER CORRADINI: I mean another way of  
4 asking the question differently is if there's  
5 something that really is important but it just weighs  
6 you down, it won't let you meet what you have in terms  
7 of time and schedule, is there something that can be  
8 spun off and have DOE with EPRI and NRC in a separate  
9 -- in other words, the thing that strikes me with a  
10 lot of this stuff I would expect it just shouldn't be  
11 NRC dealing with this. There should be others  
12 involved. Is there a way to essentially take pieces of  
13 this and split them off so that there might be some  
14 common approach with others?

15 MR. KURITZKY: Well, and that's a good  
16 point. There are definitely collaborative efforts that  
17 we can do with other agencies, I'm sure aspects and we  
18 have in the past.

19 MEMBER CORRADINI: But this would  
20 essentially eliminate that having to weigh down this  
21 effort.

22 MR. KURITZKY: Right. But that is to say,  
23 that is a sub-piece of the overall fact that what  
24 we're trying to do is as these other issues come up is  
25 to say "Hey, that's a good idea, that's a good issue,

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 that should be looked at; it just has to be looked at  
2 external to this project. It can be looked at in  
3 parallel with this project depending on what it  
4 involves, or it can be looked at after this project is  
5 completed. But it should not be part and parcel of  
6 this core project because that would just drag us  
7 down. So whether that's done just with NRC in parallel  
8 or afterwards, or whether that involves collaboration  
9 of agencies that others can make those decisions on a  
10 case-by-case basis, but clearly we want to try to keep  
11 those issues out of the scope of this project.  
12 Because, as we know, 2½ years as Dr. Stetkar has  
13 mentioned, is extremely ambitious to get all this  
14 done. And you throw more weight on the camel's back  
15 and it won't have a chance.

16 CHAIR STETKAR: It gets to the point where  
17 you've done 30 percent, not a 100 percent.

18 MR. KURITZKY: Right, right. You're  
19 optimistic with the numbers -- right.

20 And just to finalize on the idea of  
21 Fukushima, so besides scope issues also it's the issue  
22 of impact that can have on staff availability both in  
23 terms of Vogtle, because right now Vogtle is very  
24 committed to helping us and we need that commitment,  
25 but all of a sudden if there's a lot of post-Fukushima

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 work that Vogtle has to do and that uses the same  
2 people for that work, you know we're not mandatory our  
3 project, so we're not going to get priority for  
4 getting that staff. So we could suffer there.

5 The same thing internally is to be the  
6 exact example that Rich just gave. You may  
7 successfully keep something like seismic-induced fire  
8 and flood out of our project, but if the guy who we  
9 needed to do certain fire and seismic work for our  
10 project has to now go do that work in an external  
11 project, we're still taking the hit. So, you know,  
12 there's a lot of potential impacts here that we have  
13 to again be vigilant and try to manage the best that  
14 we can.

15 MEMBER SCHULTZ: In that regard, the words  
16 chosen for the slide are "Preliminary Schedule." And  
17 it seems as if it would be right for this project to  
18 get buy-in to this schedule as soon as possible so  
19 that other efforts that don't fit with your schedule  
20 can be set aside as you were discussing a moment ago.

21 MR. KURITZKY: And that's the purpose --  
22 I mean, I can't tell you it's the purpose of this  
23 plan. I mean, the Commission told us to put this plan  
24 up. But the benefit of bringing this plan up right now  
25 is that it does get buy-in from other offices as it

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 goes up to the Commission and the Commission will  
2 hopefully buy-in to it when they receive it. And so  
3 that hopefully gives us a certain degree of  
4 protection. But, you know changing conditions will  
5 mean changing decisions, so obviously we'll always be  
6 vulnerable to some extent.

7 MEMBER SCHULTZ: I understand. Thank you.

8 MR. KURITZKY: Communications, there's two  
9 basic types of communications I wanted to talk about.  
10 One type is just the exchange of information between  
11 the licensee and the NRC both in terms of all the  
12 technical information we'll need from the plant to do  
13 the PRA as well as information that we'll generate as  
14 part of the study, which will then we'll also want to  
15 make sure that the licensee fact-checks things for us,  
16 you know is looking out for proprietary information.  
17 Because a lot of the information that we'll probably  
18 use in that study will, in fact, be proprietary. So  
19 there's going to be that two-way exchange of  
20 information.

21 So, one of the first things I mentioned  
22 before that we need to do now that we're getting this  
23 plan pushed through concurrence is to work with the  
24 Division of Operating Reactor Licensing and NRR and  
25 the licensing to establish a communications protocol

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701



1 to determine how we're going to transfer and manage  
2 and control information.

3 The other type of communication is just  
4 the communication about the project status results to  
5 external and internal stakeholders. Because, as I  
6 mentioned earlier, we anticipate a fair amount of  
7 interest in this project and there's a broad spectrum  
8 of internal and external stakeholders, we have  
9 developed a communications plan. We have the  
10 communications coordinator who will help us directly  
11 take care of these activities.

12 The communication plan provides key  
13 messages, it identifies the communications team and  
14 the audiences that we will talk to, and the tools and  
15 types of briefings we would give in order to keep  
16 people informed.

17 One of the main things that we want to do  
18 is talk to internal stakeholders to find out exactly  
19 what their preferred level of engagement is, so that  
20 will help us refine our briefing schedule.

21 When I look at this schedule already when  
22 the plan comes out and you see the communications  
23 plan, if you were to go up and add up all the  
24 briefings in the back about these people once every  
25 six month and these people once a year, and these

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 people one every two months; going back to you said  
2 who is going to make the decisions as far as the  
3 technical issues you know if I'm going to be busy  
4 doing briefings at times --

5 CHAIR STETKAR: That's an issue. That's  
6 why in commercial projects we had a project manager  
7 who handled budgets, schedules --

8 MR. KURITZKY: Right.

9 CHAIR STETKAR: -- and a principal  
10 investigator who did the technical work.

11 MR. KURITZKY: Right. And so I'm probably  
12 more the former. I'm trying hard to be part of the  
13 ladder. But I will be relying very heavily on Marty.

14 CHAIR STETKAR: You can't have a part-time  
15 ladder. I mean that's --

16 MR. KURITZKY: Right.

17 CHAIR STETKAR: You can't have that part-  
18 time technical lead because you will face very, very  
19 difficult technical issues.

20 MR. KURITZKY: Right.

21 CHAIR STETKAR: Maybe things like how many  
22 plant operating states and where do you want to group  
23 things together. In many cases the people doing those  
24 actual tasks don't have the integrated picture of the  
25 whole project, technical picture of the whole project

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 to make those kind of decisions.

2 MR. KURITZKY: Right. And in my mind  
3 there will be three people that will always be  
4 maintaining that integrated view, and that's going to  
5 be myself, Marty and Mary.

6 CHAIR STETKAR: Yes.

7 MR. KURITZKY: And in fact, I can't  
8 remember if I mentioned this. Organizationally that  
9 I will report to the Branch Chief for the PRA Branch  
10 in Research, and all the other people supporting the  
11 project from the NRC will all be matrixed within the  
12 existing line organization.

13 Kevin Coyne, in my branch, he was also  
14 very heavily involved in this project and will also be  
15 one of the people that we maintain this overall  
16 integrated view.

17 So, we will have several people that whose  
18 job it will be to try to make sure that everything  
19 meshes together. That's obviously not as effective as,  
20 again, just having one person full-time saying "I'm  
21 keeping track of everything, and I know everything and  
22 I can pull all the strings to make sure everything  
23 works out properly," but given the realities of what  
24 we have, I think we have sufficient defense-in-depth  
25 that we can accomplish what we need to do.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1           MEMBER SKILLMAN: With the same attitude  
2 of versions control for the various analytical codes,  
3 there needs to be configuration management and control  
4 for all of the technical information that's exchanged  
5 to ensure that superseded information is accounted for  
6 in their updates.

7           I envision a huge amount of data exchange.  
8 It would be imperative to make sure that each of the  
9 users knows which version of the technical information  
10 is the proper version for use.

11           MR. KURITZKY: Right. And all periods,  
12 that's a major issue. And I'll go back to our special  
13 report about a freeze date for what information we're  
14 using. And ideally stick to that freeze date. And in  
15 reality, of course, there's going to be times where  
16 you have to probably make exceptions, but -- they got  
17 a new diesel generator, don't worry about it, right?

18           In any case, yes, that's obviously  
19 something that we have to be very focused on. I  
20 agree. Thank you.

21           MEMBER BLEY: Alan, I'm sitting here  
22 thinking that you have to do these things, but we  
23 don't want this to interfere with what -- but you know  
24 it will. But I'm thinking of your communications, and  
25 I'm thinking of the PIRT or CPM chart we talked about

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 last time as part of your project. If you did a  
2 simplified version of the CPM kind of chart and then  
3 showed some places where if we get to this point, we  
4 could support the seismic fire work for Fukushima. If  
5 we get to this point, we could support some other  
6 application so that you could show how essential the  
7 work is to support these others rather than trying to  
8 fight them off. It might give you a tool to help other  
9 integrate how they look at this stuff and try the PRA  
10 tool -- I'm just thinking you're not going to be  
11 successful just saying, keep that away from us, keep  
12 that out of our budget. But our project can support  
13 these things in the following ways better than you  
14 could ever do without them, you know might be a place  
15 that could buy you some ground and --

16 CHAIR STETKAR: But we need to get to the  
17 certain --

18 MEMBER BLEY: --buy you some resources to  
19 stay ahead of the game.

20 MR. KURITZKY: Yes. In fact, the SRM  
21 dictates besides this plan going up in March, the next  
22 level that it mandates is a Commission paper in  
23 September which identifies all the uses of the PRA,  
24 they'll ask what the uses are. So, you know that  
25 dovetails with what you were just saying --

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 MEMBER BLEY: And the uses come with  
2 partial products that are valuable all along the way.

3 MR. KURITZKY: Right. But also, I think  
4 the main thing is going back to what Dr. Stetkar just  
5 said, is that we can use these if we can get to this  
6 point. In other words, if you sidetrack us before we  
7 even get to that point, we're not going to be able to  
8 give you something that that's useful. But if you can  
9 let us get this far along, then maybe we can give you  
10 something that you can use.

11 MEMBER BLEY: Help push us here so we can  
12 support you.

13 MR. KURITZKY: Okay. The last technical  
14 slide here is "Study Documentation."

15 MEMBER BLEY: I didn't know these were  
16 parts of it.

17 MR. KURITZKY: No. I mean, as opposed --  
18 actually, in the last few slides as opposed to what we  
19 will discuss for the future.

20 So, as part of this project, obviously  
21 there's lots of briefings, we're putting together a  
22 lot of briefing packages, but the main deliverables  
23 for the project are going to be a NUREG report,  
24 publicly available NUREG report that goes over the  
25 whole study, as well as a lot of interim letter

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 reports that address many of the deliverables and the  
2 various tasks as we go along.

3 We will probably be having two tiers of  
4 information. A top tier, which will be publicly  
5 available which will essentially be the information  
6 that would support the NUREG. And then the second  
7 tier would be composed of a lot of proprietary  
8 information. That's most of the interim letter  
9 reports on the various tasks will probably be in that  
10 category. Most of those things would not be submitted  
11 for public comment because they would have substantial  
12 amounts of proprietary information.

13 The way we would plan to interact with  
14 external stakeholders on those interim tasks, interim  
15 deliverables is just to have public meetings, and when  
16 we would presentations about that work and the  
17 presentations would be scrubbed of the proprietary  
18 information.

19 Also, again, on of the objectives of the  
20 study itself way back in the beginning we mentioned  
21 was using modern information technology processes to  
22 do a better job of documenting and making transparent  
23 the various assumptions and bases that go into the  
24 study. And so we will be exploring the use of that  
25 type of technology to improve our ability to document

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 the study.

2 Okay. And with that, that's pretty much  
3 all the stuff I wanted to talk about the plan.

4 Throughout the course of the presentation  
5 I didn't mention a number of places about what our  
6 next ongoing activities are. I will summarize right  
7 now.

8 The three main things I'm looking to do  
9 right next after this plan goes up is to, again, work  
10 with DORL, the Division of Reactor Licensing to get  
11 the protocol down with Vogtle so that we can start  
12 exchanging information. Find out what they have so we  
13 can get an idea of what it is that we need to do.

14 Start finalizing meetings and discussions  
15 to determine what state of practice and approaches and  
16 methods were going to use to actually get the study  
17 done. And, to also finalize the staff plan. And we had  
18 alluded to various types of capabilities of who needs  
19 to do the study, we need to actually put names next to  
20 all these positions and get commitments from people  
21 that these particular staff members will be available  
22 to do the work that we need them to do.

23 So, those are the things that we want to  
24 do directly after this.

25 MEMBER SCHULTZ: Alan, with respect to

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701



1 this slide on documentation --

2 MR. KURITZKY: Yes.

3 MEMBER SCHULTZ: -- I have a question  
4 related to a certain piece of documentation that I  
5 think is pretty important. And that is, you've got  
6 methodology. Your first objective is to determine the  
7 suite of methodology that would be most important to  
8 update the approaches to. Then you're going to capture  
9 in the objectives two, three and four looking at the  
10 application: How am I going to adopt or adapt or  
11 apply the methodologies? And in reaching the third  
12 objective of training staff and so forth.

13 MR. KURITZKY: Yes.

14 MEMBER SCHULTZ: Part of what will be done  
15 there is in the applications phase. Is there a plan  
16 associated with the documentation of that how-to that  
17 is in the project? It seems to -- in terms of you  
18 doing one study and then you're hoping that that's  
19 going to be applicable and both the NRC and industry  
20 will pick all this up and move forward with it. And  
21 that key piece of lessons learned associated with the  
22 application phase seems pretty important there. And  
23 it doesn't follow into it. Even though it would be  
24 easy to do in Tier 2, it really needs to be in the  
25 Tier 1 deliverable, it seems. So, that might be a

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 perplexity, but it certainly seems well worth doing.

2 MR. KURITZKY: No. I agree. I think in  
3 terms of methods and what methods to use, that's  
4 certainly a need to it. That will be publicly  
5 available information.

6 MEMBER SCHULTZ: Right.

7 MR. KURITZKY: Some of the results, some  
8 of the insights that stem from specific results,  
9 that's where we have to be a little careful to make  
10 sure that what we are producing there is not  
11 proprietary, is available for public release.

12 So, I would imagine and in terms of  
13 methods that stuff will clearly be documented in the  
14 NUREG. And essentially everything we can put in the  
15 NUREG, we will. We want to be as transparent and open  
16 with the stuff as much as we can. So anything that is  
17 not specifically proprietary and we have a very good  
18 reason why we can't release it, we want to put into  
19 the NUREG and release it. Particularly with this so-  
20 called modern or advanced documentation methods, it's  
21 not just a question of, you know a report of X size or  
22 whatever. But you know just thinking off the top of  
23 my head, but you know with all kinds of clicks of the  
24 mouse and all of the sudden you go to documents that  
25 here's the meeting notes of the meeting where we

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 decide that this is the reason why we're going to use  
2 this particular RCP seal versus this other one; you  
3 know with all that stuff you know there at the click  
4 of a button, ideally that's what we would have in the  
5 publicly available document.

6 Now, I can also envision other modern IT  
7 uses of being able to hit a button and all of a sudden  
8 see the P&ID show up and the procedures. But that,  
9 unfortunately, we'll end up having the proprietary  
10 issues. We'll have to -- and the lessons learned in  
11 the application and particularly the methods  
12 themselves which we want to try to get as much of that  
13 into the public domain as possible.

14 MEMBER SCHULTZ: That's good. Thank you.

15 MR. KURITZKY: Okay. So then the last  
16 slide just goes back to -- I think Rich alluded to  
17 this in the beginning also as far as future  
18 interactions with the Committee. There's various ways  
19 we can come back with you. We can come back to you as  
20 different deliverables are completed.

21 As I said, many of these would not be  
22 publicly available when we get into deliverables. But  
23 you can certainly see them. We can have an open  
24 meeting on it because we would just use, again, slides  
25 that were scrubbed of proprietary information.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1           We could come on some just regular basis,  
2           like twice a year. But whatever you guys feels  
3           probably most, you know appropriate desirable from  
4           your end.

5           CHAIR STETKAR: Yes. I think we're going  
6           to have to work that out.

7           MR. KURITZKY: Yes.

8           CHAIR STETKAR: You know, there's another  
9           meeting going on parallel with this. There's, in  
10          fact, greater interest in this project than might be  
11          evidenced by the number of Members that are sitting  
12          around the table right now.

13          My personal initial inclination would be  
14          to follow interim deliverables, only because you tend  
15          to be able to get your hands around something --

16          MR. KURITZKY: You have a tangible  
17          product.

18          CHAIR STETKAR: A tangible product,  
19          something that you have programmatic. You don't have  
20          to worry about the proprietary stuff. In the  
21          Subcommittee meeting we can close Subcommittee  
22          meetings very easily. Whole Committee meetings are  
23          more difficult, but Subcommittee meetings we routinely  
24          close to protect proprietary information.

25          The other Members may have different ideas

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 about how to keep this interchange going on.

2 Let me ask you, because I tend not to be  
3 able to plan much further than tomorrow, you mentioned  
4 three tasks on your plate after you deliver. Let me  
5 ask you first about the plan that you're going to  
6 deliver this month. Is it basically a level that we  
7 heard today?

8 MR. KURITZKY: Yes.

9 CHAIR STETKAR: Okay. Then that's what  
10 we've heard about it.

11 The next three, the way I've characterized  
12 them is you say "Well, you need to put in place the  
13 vehicle to extract the input from Vogtle, the  
14 knowledge they already have. You need to make some  
15 decisions about the methods you're going to use  
16 overall in the project.

17 MR. KURITZKY: Yes.

18 CHAIR STETKAR: And then there's staffing  
19 and project management issues. As we get into this  
20 project, you know I think we're mostly interested in  
21 the technical things.

22 MR. KURITZKY: Yes.

23 CHAIR STETKAR: What's your schedule for--  
24 I mean, from my perspective you ought to have the  
25 Vogtle input last months.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 MR. KURITZKY: Right. Last month we  
2 didn't have Vogtle.

3 CHAIR STETKAR: Huh?

4 MR. KURITZKY: Last month we didn't have  
5 Vogtle.

6 CHAIR STETKAR: I recognize that. When do  
7 you expect to actually accomplish those two technical  
8 issues: The methods and knowing what you have from  
9 Vogtle? I mean, are we talking in weeks, you talking  
10 months, or are you talking --

11 MR. KURITZKY: Hopefully, that's weeks.  
12 That's really what we want to set it up to do.

13 With Vogtle it's just a question now we've  
14 been busy getting this plan concurred on to the  
15 Commission and doing briefings. So my time has been  
16 kind of side-tracked. But we want to go right now to  
17 talking to DORL, talking to the licensee and get that  
18 moving right away. And so I'm hoping that we can start  
19 making initial discussions within a week or two. You  
20 know, getting that moving right away.

21 CHAIR STETKAR: Yes.

22 MR. KURITZKY: Also in parallel I want to  
23 also start also start working on the approaches for  
24 how we're going to do this thing.

25 CHAIR STETKAR: Right.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 MR. KURITZKY: So, I mean that's stuff  
2 that we can also do on parallel.

3 The actual detail plan has to wait until  
4 we have the staffing, find out what we need to do and  
5 what approaches we're going to take. But all that, we  
6 should be moving out within these weeks.

7 CHAIR STETKAR: Okay. That helps. Because  
8 it strikes me there are a lot of important pieces of  
9 information that will come out of those two tasks.

10 MR. KURITZKY: Yes.

11 CHAIR STETKAR: Those two items that could  
12 substantially effect how the whole project is  
13 organized.

14 MR. KURITZKY: It will.

15 CHAIR STETKAR: Not in terms of staffing  
16 or scheduling --

17 MR. KURITZKY: I understand.

18 CHAIR STETKAR: -- but in terms of  
19 technical approaches to different issues.

20 MR. KURITZKY: Right.

21 CHAIR STETKAR: And my initial  
22 inclination, we'll go around the table after and see  
23 if anybody else has other ideas, is after you have  
24 that basic information and have a understanding about  
25 how the project is going to be done, and I'm not

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 talking about, as I said, you know internal staffing  
2 or any of that stuff, just basically this is what we  
3 have, here's how we're going to address the issue of  
4 fires during shutdown, because we have X and Y, and we  
5 don't have Z. And here's how we're going to address  
6 the issues of, you know multi-unit initiating events  
7 because we have A and not B or C. But those decisions  
8 need to be made, I'm assuming, within the next -- I'll  
9 use the term "couple -- couple of months.

10 MR. KURITZKY: Right. Right. But also  
11 keep in mind some of the issues you just brought up  
12 are not things that we're going to be able to decide  
13 up front, though. A lot of that stuff is -- a lot of  
14 the information is available, we have to come up with  
15 how we're going to address in general the approach.  
16 But certain things like how we address the task of  
17 multi-unit risk, that's a task in itself we're  
18 actually going to get contractor support to help us.  
19 And so that's something that we're not going to be  
20 able to decide up front. That's going to be like a  
21 little mini study in its own right.

22 So, some of those things we'll be able to  
23 decide up front, some of them are going to be picked  
24 up as we go forward.

25 CHAIR STETKAR: All right. Well, I would

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701



1 just kind of float some ideas about I don't think it's  
2 useful for us to wait another year to hear from you.

3 MR. KURITZKY: Right.

4 CHAIR STETKAR: Nor do I think it's useful  
5 for us to hear from you every two weeks.

6 MR. KURITZKY: Right.

7 CHAIR STETKAR: And I'm not sure what the  
8 interim deliverables are.

9 MEMBER CORRADINI: Could I ask a question?  
10 Really, I'm kind of with John about the fact that it  
11 ought to be something that's substantive that you feel  
12 comfortable talking about. What's the first  
13 substantive deliverable that's going to come up per  
14 your plan? And when?

15 MR. KURITZKY: Again, we haven't really  
16 laid out -- well, the only deliverables we have laid  
17 out in the actual plan would be more general in terms  
18 of tasks, like internal events and Level 1 PRA. It  
19 doesn't go down to, for instance, when do we have a  
20 document that says here's how we tend to approach  
21 these aspects of the study. So, I don't have a  
22 schedule on that.

23 I would like to say that's going to be  
24 something that's going to something that's going to  
25 happen in the next few months. If we're going to have

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 any chance of making the schedule, it's going to have  
2 to happen in the next --

3 CHAIR STETKAR: You can't use the term  
4 "few" anymore: It's got to be.

5 MR. KURITZKY: Right.

6 CHAIR STETKAR: By the end of April or--

7 MR. KURITZKY: Right. Because nothing can  
8 move that fast because there are just too many parties  
9 and too many parts and pieces that have to be  
10 addressed. So the reality is nothing is going to move  
11 as fast as we would like it to. One you stop and  
12 really think about what's involved and how broad, how  
13 many piece-parts are involved, it's just not going to  
14 happen as quickly as we would like it to. But that  
15 said, it has to happen quickly to have any chance of  
16 making the schedule. So, like I said, that's where  
17 we're running to right now as this plan is going up  
18 for concurrence, you know this week or whenever, we're  
19 going right to those other items and try and get as  
20 much of those under the umbrella as we can right now.

21 So, like I said, we probably will have a  
22 god idea of what we're doing within the next few  
23 months. I mean, obviously we have to. We have to know  
24 how we're going forward in the next in the next two or  
25 three months. We have to be already doing it in the

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 next two or three months.

2 MEMBER SCHULTZ: It seems that you owe it  
3 to yourself and to the project to get there soon.

4 And, John, I think we owe Alan and the  
5 team an opportunity for our comments as well.

6 CHAIR STETKAR: That's what I was  
7 thinking.

8 MEMBER SCHULTZ: So, whatever the meeting  
9 time is, maybe it's May, but sometime soon. I want to  
10 see how it's getting started, where the steps are  
11 being taken.

12 CHAIR STETKAR: Certainly at the point --  
13 I mean when you actually see what you have from  
14 Vogtle, the scope of what they've done so that you  
15 know which holes are reasonable full, partially full  
16 or --

17 MR. KURITZKY: Right, right.

18 CHAIR STETKAR: -- completely empty.

19 MEMBER CORRADINI: But what would they  
20 back to talk to us -- or what would the project expect  
21 from us, though, if they came back in a matter of a  
22 few months not a letter?

23 CHAIR STETKAR: I don't think so.

24 MEMBER CORRADINI: Good.

25 CHAIR STETKAR: Because then we would be

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 your --

2 MR. KURITZKY: I mean, we'd more be like  
3 just getting your feedback on what our approaches are.

4 CHAIR STETKAR: I mean, that's why I was  
5 saying the combination of the method, you knowing what  
6 you have and what you don't have from available study  
7 and methods that you're going to use --

8 MR. KURITZKY: Right, and what we need to  
9 do.

10 CHAIR STETKAR: -- for each of the major  
11 tasks --

12 MR. KURITZKY: Right.

13 CHAIR STETKAR: -- might be a useful point  
14 of exchange.

15 MR. KURITZKY: Right. And that wouldn't be  
16 specifically deliverable. I mean --

17 CHAIR STETKAR: That is not a deliverable.  
18 That's -- unfortunately, that's not a technical  
19 deliverable.

20 MR. KURITZKY: Right.

21 CHAIR STETKAR: You know, from there going  
22 forward, then I think we would want to interact with  
23 you as --

24 MR. KURITZKY: Right.

25 CHAIR STETKAR: -- tangible deliverables

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 come out of that process.

2 MEMBER BLEY: Yes, I understand the  
3 problem you've had with all these entities, but right  
4 now you could if you had the people identified, that  
5 your -- person and head systems person going through  
6 the SOARCA models to see what the heck they look like  
7 so that you could move ahead with the plan. You could  
8 have an expert down there who knows the SOARCA models  
9 inside and out, sit down with the plan, he could go  
10 over the PRA and start really getting things going.  
11 I don't know if you've got those people yet, but I'd  
12 sure be trying to have them, and have them be doing  
13 that.

14 And there are some technical things that  
15 you can do right now. And then you know look smarter  
16 when you go to the plant

17 CHAIR STETKAR: Anything else?

18 MR. KURITZKY: That's it.

19 CHAIR STETKAR: Okay. A couple of things.  
20 What I'd like to do before we close is go around the  
21 table and see if we have any comments, questions from  
22 any of the Members regarding either anything we've  
23 heard or any thoughts about issues or schedules for  
24 future interactions on this particular project.

25 And I'll start with Dick, since I

1 remembered your name.

2 MEMBER SKILLMAN: Yes, thank you.

3 You really have a 48 months schedule here.  
4 But your real pressing need is this PRA standard-based  
5 peer review in the spring of 2014 and the issuance of  
6 the NUREG in the fall. That's really 30 months out,  
7 not 48.

8 MR. KURITZKY: Right.

9 MEMBER SKILLMAN: I would ask what  
10 communication plan you as the head of the project team  
11 have considered? I'm wondering if you have developed  
12 a basic skeleton of what it is you think you need to  
13 get done and how often you communicate with your  
14 sponsors as to whether or not you are ahead of  
15 schedule or behind schedule. And if behind schedule,  
16 what do you need?

17 On personal experience in running large  
18 complicated projects like this one is where I was  
19 assertive in communicating and asking for help, I  
20 generally succeeded. But in every case where I failed  
21 to communicate and failed to ask for help, I failed.

22 I've never run a project in the  
23 government. I can imagine it's very difficult. And so  
24 I acknowledge that. But it seems to me that if you  
25 were to lay out an aggressive communication schedule

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 along with a realistic work schedule and you were very  
2 punctual in communicating whether you're behind the  
3 curve or ahead of the curve, you'd probably have a  
4 much greater chance of being successful, particularly  
5 in your 24 to 30 month target that is the NUREG.

6 MR. KURITZKY: Yes. And we do actually  
7 have -- the plan that's going up does have an initial  
8 communications plan attached to it. It doesn't  
9 directly address the idea of whether or not the people  
10 know whether we're ahead or behind schedule and the  
11 need for help to try and get us back on track if we're  
12 off track, but --

13 MEMBER SKILLMAN: Well, a 30 day update  
14 each 30 days goes a long way to being able to  
15 communicate. I believe I told you three months ago I  
16 needed that, and I still need it. And 90 days have  
17 passed, and I still need it. But failing to do that,  
18 you lose your opportunity to make that part of this  
19 meeting. So, a regular -- not just a plan, but a  
20 discipline --

21 MR. KURITZKY: Yes.

22 MEMBER SKILLMAN: -- to communicate often  
23 on that plan.

24 MR. CORREIA: If I could add, right now  
25 Alan and his team with me, probably with Kathy and our

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 other peers on a monthly basis. And one of my jobs is  
2 to make sure that Alan gets what he needs for the  
3 project.

4 I appreciate what you say; it can be a  
5 challenge with FTE and dollars.

6 MEMBER SKILLMAN: John, Thank you.

7 CHAIR STETKAR: Thanks.

8 Steve?

9 MEMBER SCHULTZ: I appreciate the briefing  
10 that you've provided, and it does appear that you've  
11 got a good handle on the challenges both project  
12 management wise as well as technical that you're  
13 facing. So, I'm looking forward with the Committee  
14 working with you to help move the project forward.  
15 But it appears as if the time at which you're going to  
16 receive the kickoff, if you will, from Vogtle and some  
17 elements of the technology is yet to come. So, I'd be  
18 looking for the next phase of the plan, which is when  
19 you receive that ball give us the next program plan to  
20 move the ball down the field.

21 MR. KURITZKY: Thank you.

22 MEMBER BLEY: Dennis?

23 MEMBER BLEY: Yes. Congratulations. I  
24 didn't think we'd have a project by now, but I'm glad  
25 we do. And it looks like you guys are running it

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701



1 ahead.

2 MR. KURITZKY: Thank you.

3 MEMBER BLEY: I don't know how you do it.  
4 I'd just keep saying anything you can get done or want  
5 to get done because you're going to be desperate for  
6 that time.

7 MR. KURITZKY: Yes, we are. I agree.

8 CHAIR STETKAR: Bill?

9 MEMBER SHACK: No comments.

10 MEMBER CORRADINI: I've made my comments.

11 The only thing, I guess, is from the  
12 standpoint of coming back to us, let me put it this  
13 way: If I were in your shoes, I wouldn't stand on  
14 formality. If there's a way that you can automate --  
15 "automate" is the word. Give live access that we an  
16 just kind of look about things, I would encourage it.  
17 Within the NRC system I assume, you guys are so  
18 technologically -- is that you would have some -- I  
19 would call it the equivalent of essentially a  
20 protected communication board or a blackboard that --

21 MEMBER SHACK: A SharePoint system.

22 MEMBER CORRADINI: No, no, no. But  
23 something that people can go and look at and probe at  
24 just a high level as to where you sit. So that would  
25 relieve some of the burden on you having to run out

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 and give PowerPoint 1 and PowerPoint 2 and PowerPoint  
2 umpity-ump and all you're doing is regurgitating the  
3 same sort of thing, right?

4 MR. KURITZKY: Right.

5 MEMBER CORRADINI: Almost as if you would  
6 have an on-site PowerPoint presentation that would be  
7 updated on some sort of bases that people just say  
8 where you are.

9 I know everybody has a different slice of  
10 this, but I guess my only thought is that since you're  
11 boss, you have to develop a style that a lot of you  
12 would be most effected and most productive. So,  
13 whatever that is, please go do it and don't listen to  
14 others. Because I have this terrible feeling your  
15 names are going to appear on this whether it's a  
16 success, right, or less than a success?

17 MR. KURITZKY: Right.

18 CHAIR STETKAR: IT will be a success.

19 MEMBER CORRADINI: It will be a success.  
20 But only point is usually things such as this succeed  
21 because the person in charge arranges it to the style  
22 that they feel most comfortable with to make it a  
23 success. So that would be my biggest recommendation is  
24 listen to us to the extent that you feel like and if  
25 it's a dumb idea to you, it's a dumb idea, throw it

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 away. Do what you think is going to make a success  
2 from your style of -- otherwise you're going to try to  
3 please others and you'll never please yourself, and  
4 that would be terrible.

5 MR. KURITZKY: I appreciate that.

6 I do want to address just the one  
7 question. We do actually have in the communication  
8 plan, I know they're smirking about SharePoint sites,  
9 but we actually do have a SharePoint site. Marty had  
10 one set up for the scoping site. It was done prior to  
11 SECY-11-089. We're going to have a SharePoint site for  
12 this project as well as the communication plan calls  
13 out for a webpage both external and internal webpages  
14 which will have update information on the project. So,  
15 we are going to make use of that technology.

16 To what extent that gets me out of  
17 briefings; I'm not sure yet, but we will already try  
18 to make use of that technology.

19 So, thank you.

20 CHAIR STETKAR: Just for the record, we've  
21 been joined by Dr. Said Abdel-Khalik. And, Said, do  
22 you have anything --

23 MEMBER ABDEL-KHALIK: No.

24 CHAIR STETKAR: What I'd like to do is  
25 open up the bridge line, and do we have any members of

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 the public here who would like to make a comment?  
2 We'll just wait and see if anybody's still out there  
3 and if they want to make a comment.

4 MR. KURITZKY: While we wait, I'm going to  
5 start doing event trees.

6 CHAIR STETKAR: That's it. There you go.  
7 There you go. Having known both of you for a while,  
8 I'm surprise you're not half done already.

9 MEMBER CORRADINI: Is that the secret  
10 weapon? You actually have it done, you just won't  
11 release yet --

12 MR. KURITZKY: Right. We're going to mete  
13 it out, right. Yes.

14 CHAIR STETKAR: I understand the line's  
15 open. Since we have no idea of whether the line is  
16 actually open if there's anyone out there, even if you  
17 don't want to make a comment, could you just say  
18 something so that we know you're out there and the  
19 line's open?

20 Hearing nothing, it's either no one is out  
21 there or we've made a valiant attempt and failed.

22 So, unless there's any other comments, I'd  
23 like to really thank the staff. I think this has been  
24 really, really useful and I'm glad to see that you're  
25 progressing.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 I thought Steve's comments -- I think you  
2 know where the problems are. It's now, you know you're  
3 rolling your sleeves up.

4 Alan and Marty, thanks very much. Rich,  
5 appreciate this opportunity. And we're adjourned.

6 (Whereupon, at 3:34 the meeting was  
7 adjourned.)  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25



# **Full-Scope Site Level 3 PRA Initial Project Plan**

Advisory Committee on Reactor Safeguards  
Probabilistic Risk Assessment Subcommittee

March 6, 2012

Alan Kuritzky  
Division of Risk Analysis  
Office of Nuclear Regulatory Research  
(301-251-7587, [Alan.Kuritzky@nrc.gov](mailto:Alan.Kuritzky@nrc.gov))

# Background

- Commission paper (SECY-11-0089), dated 7/7/11, provided three options for undertaking Level 3 PRA activities<sup>1</sup>
  - 1) Maintain status quo
  - 2) Focused research to address gaps before proceeding
  - 3) Conduct a full-scope, comprehensive site Level-3 PRA
- In a staff requirements memorandum (SRM) dated 9/21/2011 the Commission approved a modified version of Option 3
  - Schedule extended from 3 to 4 years

<sup>1</sup>Level 3 PRA includes the onset of core damage, the release of radioactive material to the environment, and offsite radiological consequences.

# Objectives

- Develop a Level 3 PRA, generally based on current state of practice,\* that (1) reflects technical advances since the last NRC-sponsored Level 3 PRAs were completed over 20 years ago, and (2) addresses scope considerations that were not previously considered
- Extract new insights to enhance regulatory decisionmaking and to help focus limited agency resources on issues most directly related to the agency's mission to protect public health and safety
- Enhance PRA staff capability and expertise, and improve documentation practices to make PRA information more accessible, retrievable, and understandable
- Demonstrate technical feasibility and evaluate the realistic cost of developing new Level 3 PRAs

\* "State-of-practice" methods, tools, and data are those that are routinely used by the NRC and licensees and/or have acceptance in the PRA technical community.



# Scope

- Includes all site radiological sources (all reactor cores, spent fuel pools, and dry storage casks on site), all internal and external initiating event hazards, and all modes of operation
  - Excludes radiological sources involving fresh nuclear fuel, radiological waste, and minor radiological sources (e.g., calibration devices), and initiating events involving malevolent acts
- Incorporates improvements in PRA technology and changes in plant operational performance and safety since completion of NUREG-1150
- Excludes some aspects for which there is no current state of practice (e.g., software failure and aging)
- The study will be for a single multi-unit site; therefore, it is not likely to provide insights applicable to all sites and all technical issues.

# Resource Plan (1)

## *Schedule:*

- Per SRM-SECY-11-0089, site Level 3 PRA project to be completed in 4 years
- Significant pre-planning activities performed in early FY 2012
- Technical aspects of study to start in April 2012
- Completion by March 31, 2016

# Resource Plan (2)

## *Budget:*

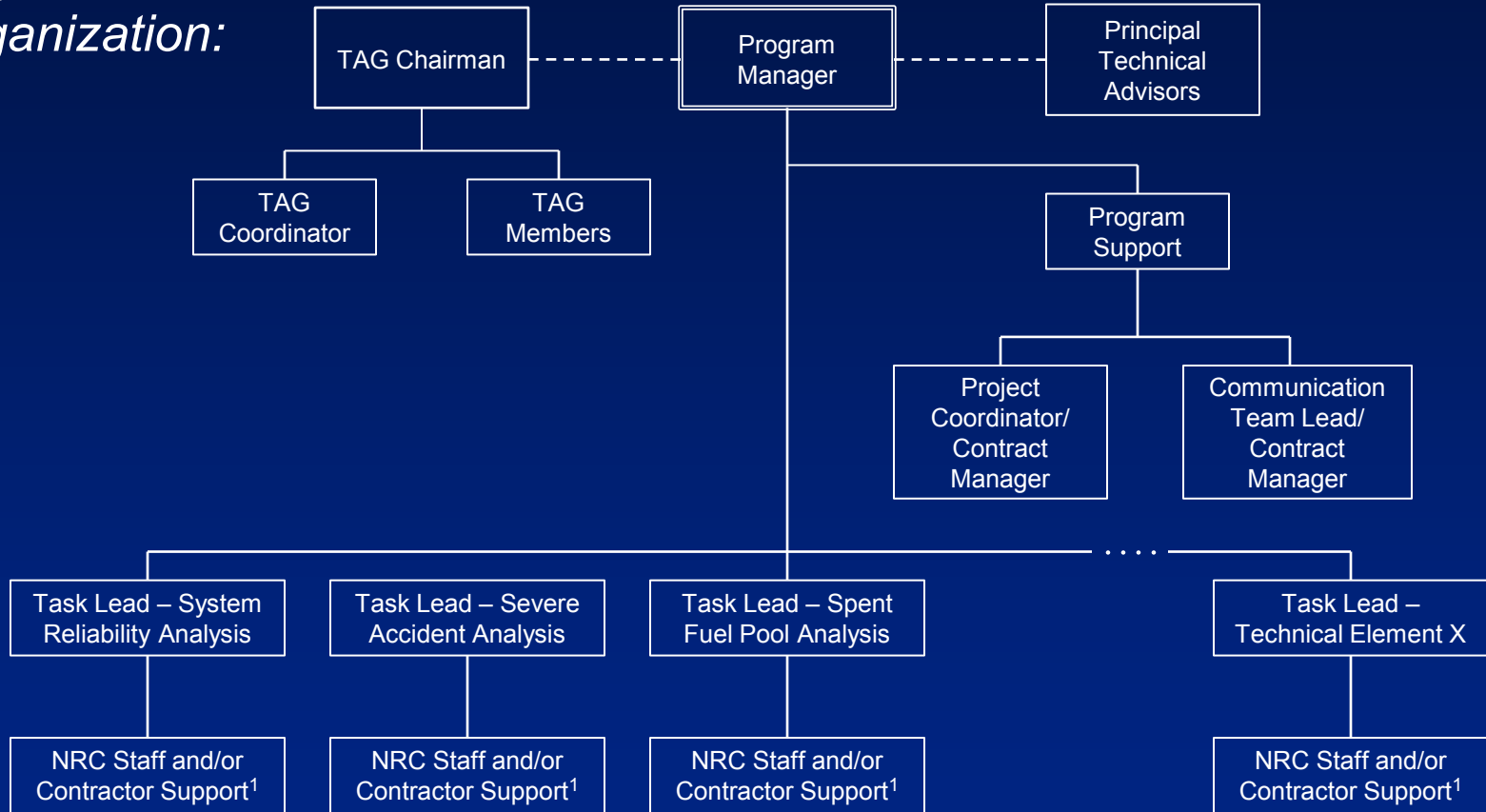
Fiscal Year	NRC Staff Resources	Contractor Resources
2012	3 FTE	\$1.0M
2013	8 FTE	\$2.0M
2014	7 FTE	\$2.0M
2015	4 FTE	\$0.5M
2016	2 FTE	\$0.5M
<b>TOTAL</b>	<b>24 FTE</b>	<b>\$6.0M</b>

## *Project Team Composition:*

- Multi-disciplinary team of senior and junior staff with experience in PRA and supporting technical areas
- To extent practical, composed of RES staff
- Some technical support needed from other NRC offices, including senior level representatives for Technical Advisory Group (TAG)
- Commercial and DOE laboratory contractor support needed to supplement project team and address more complex and innovative aspects of study
- Plan to seek industry participation in peer reviews

# Resource Plan (4)

## Project Team Organization:



<sup>1</sup>NRC staff support and expertise will be matrixed in from across the agency, as needed and as available. Contractor support will be obtained from a combination of DOE laboratories and commercial organizations.

# Resource Plan (5)

## Technical Task Staffing Plan:

NRC Task Lead	NRC Task Support	Tasks
Sr. internal events PRA analyst	PRA analyst-1	Internal initiating event analysis
		Event tree development
		System reliability modeling
		Data analysis
		Update SPAR model
		Accident sequence quantification
		Advanced documentation
		ASME-standard-type peer review
Sr. human reliability analyst	PRA analyst-1	Human reliability analysis
Sr. "all hazards" PRA Analyst	PRA internal hazards analyst-1	Internal fire PRA
		Internal flood PRA
	PRA external hazards analyst-1	Seismic PRA
		High winds, external floods, and other events PRA
Sr. low power and shutdown PRA analyst	PRA analyst-2	Low power and shutdown PRA

# Resource Plan (6)

## Technical Task Staffing Plan (Continued):

NRC Task Lead	NRC Task Support	Tasks
Sr. thermal-hydraulic/ Level 2 PRA analyst	MELCOR analyst-1	System success criteria determination and event timing
		Severe accident progression and source term analysis
Sr. Level 2 and Level 3 PRA analyst	MELCOR analyst-1	Severe accident progression and source term analysis
	MACCS2 analyst-1	Consequence analysis
Sr. spent fuel pool/dry cask storage PRA/ thermal-hydraulic analyst	Spent fuel pool/dry cask storage PRA/ thermal-hydraulic analyst-1	Spent fuel pool PRA
		Dry cask storage PRA
Principal technical advisors	None	Multi-unit effect analysis
		Integrated uncertainty analysis
		PRA quality

# EPRI Interactions

- SRM-SECY-11-0089 directs staff to explore collaboration with EPRI
- EPRI indicated they do not have resources available for new initiatives, including supporting the Level 3 PRA study
- EPRI may be willing to collaborate on a number of ongoing projects with nexus to Level 3 PRA study (e.g., seismic fragility analysis and seismic PRA)
- EPRI representative will serve on Level 3 PRA TAG



# Site Selection

- Staff identified preliminary set of site selection criteria
- Public meeting held on November 10, 2011, to get external stakeholder feedback on selection criteria
- Letter sent to NEI on December 6, 2011, requesting assistance in identifying volunteer licensees
- Based on results of NEI's interaction with prospective volunteer licensees and consideration of the selection criteria, NEI informed the staff by letter dated February 14, 2012, that operating Units 1 and 2 at Vogtle Electric Generating Plant are willing to participate in the Level 3 PRA study

# Technical Approach Philosophy

- Consistent with project objectives, Level 3 PRA study will generally be based on current “state of practice”
- State-of-practice methods to be used will be primarily identified based on:
  - 1) Results of earlier scoping study (documented in SECY-11-0089)
  - 2) Additional interactions targeting NRC experts in each technical area
  - 3) Input from the TAG

# Proposed Tools and Models

- SAPHIRE 8 – NRC’s standard software application for performing PRAs; has increased capability for handling large, complex models.
- MELCOR – Used for performing thermal-hydraulic (T-H) analysis to determine system success criteria and accident sequence timing, and for modeling severe accident progression for reactors, spent fuel pools, and dry storage casks.
- MACCS2 – Used to evaluate public consequences of severe accidents at diverse reactor and non-reactor facilities
- SPAR model – In-house PRA models used to support risk-informed activities.

# Risk Metrics

- Level 3 PRA study will provide risk metrics in terms of public health effects
- Economic cost information will be used as an additional source of insights for site risk
- Consistent with current PRAs, will also provide intermediate reactor risk metrics of core damage frequency (CDF) and large early release frequency (LERF)

# Key Challenges (1)

- The full-scope site Level 3 PRA involves a significant number of technical aspects and associated tasks.
- Many of these tasks involve challenges or gaps in PRA technology that need to be addressed to the extent practical in the study.
- Methods for addressing these tasks are categorized as follows:
  - Green: A consensus method is available that requires no modification (e.g., the fault tree approach for system reliability analysis and the parameter estimation approach for independent component failures)
  - Yellow: Methods exist, but limited effort is required to either improve them or to select among several consensus approaches (e.g., reactor coolant pump seal leakage model and common-cause failure modeling)
  - Orange: No method has been developed and/or demonstrated in an integrated PRA application, but existing methods or approaches could be adapted with moderate effort (e.g., human reliability analysis for actions following a seismic event or core damage)
  - Red: New method development is necessary, which could require significant effort (e.g., addressing multi-unit risk)

# Key Challenges (2)

- Modeling of site risk (Red)
  - Current PRA models do not consider multi-unit accidents or interactions between reactor units and spent fuel pools and dry storage casks.
  - To understand the contribution of multi-unit and non-reactor effects to overall site risk, PRA models need to be enhanced to address:
    - Common initiating events, equipment, and operator actions
    - Effects of core damage, radiological release, and mitigation actions on operator response
    - Integrated models for all site radiological sources, including consideration of model end-states, risk metrics, and mission times
    - Integrated uncertainty analysis for overall site risk
- Spent fuel PRA technology (Orange)
  - Limited risk-related studies have addressed various aspects of the risk of accidents involving spent fuel pools and dry cask storage.
  - Additional or significantly improved PRA technology is needed for meaningful comparison and relative risk ranking.

## Key Challenges (3)

- Human reliability analysis for other than internal events and internal fires at power (Orange)
  - State-of-practice HRA methods currently exist for addressing operator performance in Level 1 PRA for internal events and in internal fire
    - RES currently developing improved HRA approach in response to SRM-M061020
  - State-of-practice HRA methods do not currently exist for external events, low power and shutdown operating states, or post-core damage
  - Post-core damage HRA modeling primarily involves operator actions incorporated into Severe Accident Management Guidelines (SAMGs) and Extensive Damage Mitigation Guidelines (EDMGs)
    - “Knowledge-based” operator actions, as opposed to “rule-based”
    - No clear single correct action
    - Evaluators must make risk-benefit decisions

## Key Challenges (4)

- Additional technical elements where an approach may need to be chosen, improved upon, or developed:
  - Level 2 and Level 3 PRA uncertainty analysis
  - Integration of support system initiating event models
  - Conditional steam generator tube rupture
  - Reactor coolant pump seal loss-of-coolant accident (LOCA) model
  - Common-cause failure (CCF) modeling and data
  - Electric cable raceway database
  - Seismic fragilities
  - Frequency of external flooding
  - Operational data for low power and shutdown plant operating states
  - Severe accident progression modeling
  - Mission time (for severe accident progression, consequence analysis, and non-reactor radiological sources)



# Project Milestones

- Project milestones categorized as follows:
  - Initial (preparatory) work
  - Aspects of the study that are within the scope of the ASME PRA standard (i.e., the Level 1 and LERF portions of the PRA for the reactor at full power)
  - Aspects of the study that are beyond the scope of the ASME PRA standard
  - Documentation of the complete study (NUREG report)
- Preliminary schedule for ASME-PRA-standard-based peer review
  - Spring 2014
- Preliminary schedule for completing the draft NUREG report – Fall 2014
- External influences can potentially impact the schedule and budget, for example:
  - Extent of progress on HRA approach in response to SRM-M061020
  - Impact from SRM-SECY-11-0172 on using the Level 3 PRA to pilot draft guidance on expert elicitation
  - Impact from response to Fukushima
  - Continued availability of Vogtle staff to support the study

- Technical information exchange between licensee and NRC
  - Systems descriptions and diagrams, plant procedures, training manuals, T-H calculations, etc.
  - Interim project documents prepared by the NRC
  - Much of this information may be proprietary
  - RES will work with NRR/DORL and the licensee to establish a communications protocol
- Communication of study status and results with internal and external stakeholders
  - Communication plan developed
    - Key messages, communication team, audience and stakeholders, communication tools and timeline, Q&A's
  - Internal stakeholders will be identified and queried for their desired level of engagement
  - Initial communications will focus on feedback on proposed methods for study

# Study Documentation

- Level 3 PRA study documentation will include briefing packages, interim letter reports, and a final NUREG report
- Communication protocol with volunteer licensee will address factual accuracy and proprietary information
- Interim deliverables will generally not be released for public review and comment; external stakeholder interaction will generally occur through public meetings
- Documentation will likely be multi-tiered – top tier would be publicly available, lower tier would not be
- Advanced documentation methods will be explored
  - Use of modern information technology to improve risk communication and make PRA information more accessible, retrievable, and understandable
  - Survey internal stakeholders to identify desired documentation capabilities

# Future Interactions

- As interim deliverables (or sets of deliverables) are available for review

**OR**

- Regularly scheduled intervals (e.g., semi-annually)

**OR**

- Other??