



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

September 18, 2012

MEMORANDUM TO: ACRS Members

FROM: John Lai, Senior Staff Engineer /RA/
Technical Support Branch
Advisory Committee on Reactor Safeguards

SUBJECT: CERTIFIED MINUTES OF THE ACRS RELIABILITY AND PRA
SUBCOMMITTEE MEETING ON LEVEL 3 PRA ON MARCH 6,
2012

The minutes of the subject meeting were certified on September 7, 2012, as the official record of the proceedings of that meeting. Copies of the certification letter and minutes are attached.

Attachments: As stated

cc C. Santos



**UNITED STATES
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WASHINGTON, DC 20555 - 0001**

September 18, 2012

MEMORANDUM TO: John Lai, Senior Staff Engineer
Technical Support Branch
Advisory Committee on Reactor Safeguards

FROM: John W. Stetkar, Chairman /RA/
Reliability and PRA Subcommittee

SUBJECT: CERTIFICATION OF THE MINUTES OF THE ACRS
RELIABILITY AND PRA SUBCOMMITTEE ON LEVEL 3 PRA ON
MARCH 6, 2012

I hereby certify, to the best of my knowledge and belief, that the minutes of the subject meeting are an accurate record of the proceedings for that meeting.

/RA/ Date 9/7/2012
John W. Stetkar, Chairman
Reliability and PRA Subcommittee

**ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
MINUTES OF THE ACRS RELIABILITY AND PRA SUBCOMMITTEE MEETING
MARCH 6, 2012**

The ACRS Reliability and PRA Subcommittee held a meeting on March 6, 2012 in Room T-2B3, 11545 Rockville Pike, Rockville, Maryland. The meeting convened at 1:00pm and adjourned at 3:34pm. The entire meeting was open to the public. No written comments or requests for time to make oral statements were received from members of the public related to this meeting.

ATTENDEES

ACRS Members

John Stetkar, Subcommittee Chairman
Dennis Bley, Member
Said Abdel-Khalik, Member
William Shack, Member
Michael Corradini, Member
Gordon Skillman, Member
Steve Schultz, Member

ACRS Staff

John Lai, Designated Federal Official

NRC Staff

Alan Kuritzky, RES/DRA
Richard Correia, RES/DRA
Martin Stutzke, RES/DRA
Kathy Gibson, RES/DRA
Don Helton, RES/DRA
Anders Gilbertson, RES/DRA
Ming Li, RES/DRA
Michelle Gonzalez, RES/DRA
Mary Drouin, RES/DRA
Damaris Marcano, RES/DRA
Dennis Damon, NMSS/FCSS

Other Attendees

Roy Karimi, ERI
Ali Azarm, IESS
Patrick Castleman, PCMI

SUMMARY

The purpose of the meeting is to hear staff's level 3 PRA development plan in response to the Commission's Staff Requirements Memorandum (SRM) on SECY 11-0089. The meeting transcripts are attached and contain an accurate description of each matter

discussed during the meeting. The presentation slides and handouts used during the meeting are attached to these transcripts.

Major Issues discussed during the meeting are described in the following Table.

Table 1. Major Issues Discussed During the Meeting

Major Issues Discussed	
Issue	Reference Pages in Transcript
Alan Kuritzky of RES stated that the Commission directed the staff to develop a full scope Level 3 PRA in four years. The 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, excluding radiological sources involving fresh nuclear fuel, radiological waste, and minor radiological sources (e.g., calibration devices), and initiating events involving malevolent acts. The study will be focused on a single, dual-unit site. Alan stated that the resources include 24 FTEs and 6 million dollars.	1-24
Members and staff discussed the resources and level of staff, industry and potential academic involvement.	25-35
Members and staff discussed the process of building level 3 PRA models. Chairman Stetkar stated that it would be better to complete 100% of the work (from level 1 PRA to level 3 PRA) on 50% of the tasks (e.g., full power, seismic, shutdown, etc.) than 90% work on 100% of the tasks. Member Bley suggested that the project team include staff who have had plant operations experience.	36-41
Alan discussed the project team composition and organization. Members asked why the team is not using the volunteer plant's PRA model instead of updating the SPAR model. Alan said the staff may consider that.	41-52
Alan stated that EPRI does not have resources available for new initiatives including support of the level 3 PRA study, but they are willing to collaborate on a number of ongoing projects linked to the level 3 PRA study. EPRI will provide a member of the project technical advisory group.	52-53
Alan stated that Vogtle 1 and 2 will be the volunteer site for the level 3 PRA study. Vogtle may be in the process of completing an updated fire PRA but they do not have a seismic PRA. EPRI is developing a seismic PRA using Vogtle plant data with a new fragility method. Alan does not know if Vogtle has a shutdown PRA model.	54-58

Alan discussed the concept of state-of-practice. It means tools, methods and data that are routinely used by the NRC and licensees or that have general acceptance in the PRA technical community. It will be identified based on the earlier scoping study, interaction with NRC experts, and input from the technical advisory group (TAG).	59-60
Members and staff discussed the plan and modeling tools for the level 2 PRA study.	61-68
Members and staff discussed the validation of the MACCS2 (offsite dose release) code. Don Helton of RES stated that there is an interface between MELCOR (core melt) and MACCS2 and some of the pieces in MACCS2 have been validated. Chairman Stetkar stated the it is important to carry the project from level 1 to level 3 "horizontally" for each major element of the PRA to emphasize integration (rather than segregating level 1, level 2, and level 3 modeling efforts).	68-78
Alan discussed the key challenges facing the level 3 PRA development plan. The most challenging one is the site risk development. Current PRA models don't consider the risk of a multi-unit site. The impact of the accidents between different units on the site and the impact of spent fuel pool accidents on the reactor need to be investigated. Current PRA models need to be enhanced to address the multi-unit site risk.	80-83
Alan also discussed challenges on spent fuel pools and dry cask storage, and human reliability analysis at other operational modes than full power. He mentioned that additional technical elements may also need to be reviewed.	84-88
Chairman Stetkar asked why the shutdown risk is not "orange". A lot of work will need to be done, even though the shutdown issues may not be technically challenging. Chairman Stetkar again stated that It is better to complete 100 % of the work "horizontally" from level 1 PRA to level 3 PRA on selected tasks even if not all the tasks can be completed in the project plan.	89-93
Members and staff discussed the milestones. Members suggested that it is essential to have a fully integrated risk model in order to address some of the challenging issues. It is also suggested that some efforts could be shared by outside organizations.	95-102
Alan discussed the communications between licensee and NRC, and communication with internal and external stakeholders. He also discussed his role and other key personnel's role in the project.	103-109
Alan discussed how to organize the documents, how to interact with external stakeholders, and new ways to document the study.	109-114
Alan discussed future plans to brief the ACRS. Chairman Stetkar asked when the staff expects to receive input from Vogtle and when the staff will know the methods to be used for this project. Alan responded that they will know soon.	115-124

Chairman Stetkar asked if any Members would like to give their comments regarding today's meeting. Member Skillman stated that communication is the key for a big project. Member Corradini stated that it is important for the project lead to feel comfortable himself about technical decisions as the project goes forward and not try to please all advisors who are not directly involved with the project.	125-132
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Table 2. Action Items

ACTION ITEMS	
Action Item	Reference Pages in Transcript
None	

Documents provided to the Subcommittee

1. Staff Requirements Memorandum, SECY 11-0089 – “Options For Proceeding With Future Level 3 Probabilistic Risk Assessment (PRA) Activities”, September 21, 2011 (ML112640419)
2. SECY 11-0089, “Options For Proceeding With Future Level 3 Probabilistic Risk Assessment Activities”, July 7, 2011 (ML11144A077)
3. Letter to NRC Chairman, “Draft SECY Paper, ‘Options For Proceeding With Future Level 3 Probabilistic Risk Assessment Activities’”, ACRS Letter Report, June 22, 2011 (ML11164A050)

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

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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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

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NRC STAFF PRESENT:

JOHN LAI, Designated Federal Official

ALAN KURITZKY

RICHARD CORREIA

MARTIN STUTZKE

KATHY GIBSON

DON HELTON

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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

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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

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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

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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

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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

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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.

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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

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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

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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

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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

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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.

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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

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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

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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

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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

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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

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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.

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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

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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.

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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.

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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

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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

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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

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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

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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

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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

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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.

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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

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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 --

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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

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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

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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

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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

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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.

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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.

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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

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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

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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,

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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

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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

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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, beholding 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

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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

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

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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.

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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

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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?"

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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

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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

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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

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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,

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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

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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

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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.

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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

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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.

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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

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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

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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

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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

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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

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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.

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.

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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

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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

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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

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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

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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

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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,

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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?

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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

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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

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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

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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

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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

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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

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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

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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

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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

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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

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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 --

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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

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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

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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

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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.

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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,

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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

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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

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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

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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,

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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

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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

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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

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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

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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

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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.

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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

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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 --

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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

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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

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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

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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

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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

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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.

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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

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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.

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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.

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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

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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

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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

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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

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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

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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

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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

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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

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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

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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

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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

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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

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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.

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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.)

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Full-Scope Site Level 3 PRA Initial Project Plan

Advisory Committee on Reactor Safeguards
Probabilistic Risk Assessment Subcommittee

March 6, 2012

Alan Kuritzky
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Office of Nuclear Regulatory Research
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Background

- Commission paper (SECY-11-0089), dated 7/7/11, provided three options for undertaking Level 3 PRA activities¹
 - 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

¹Level 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:

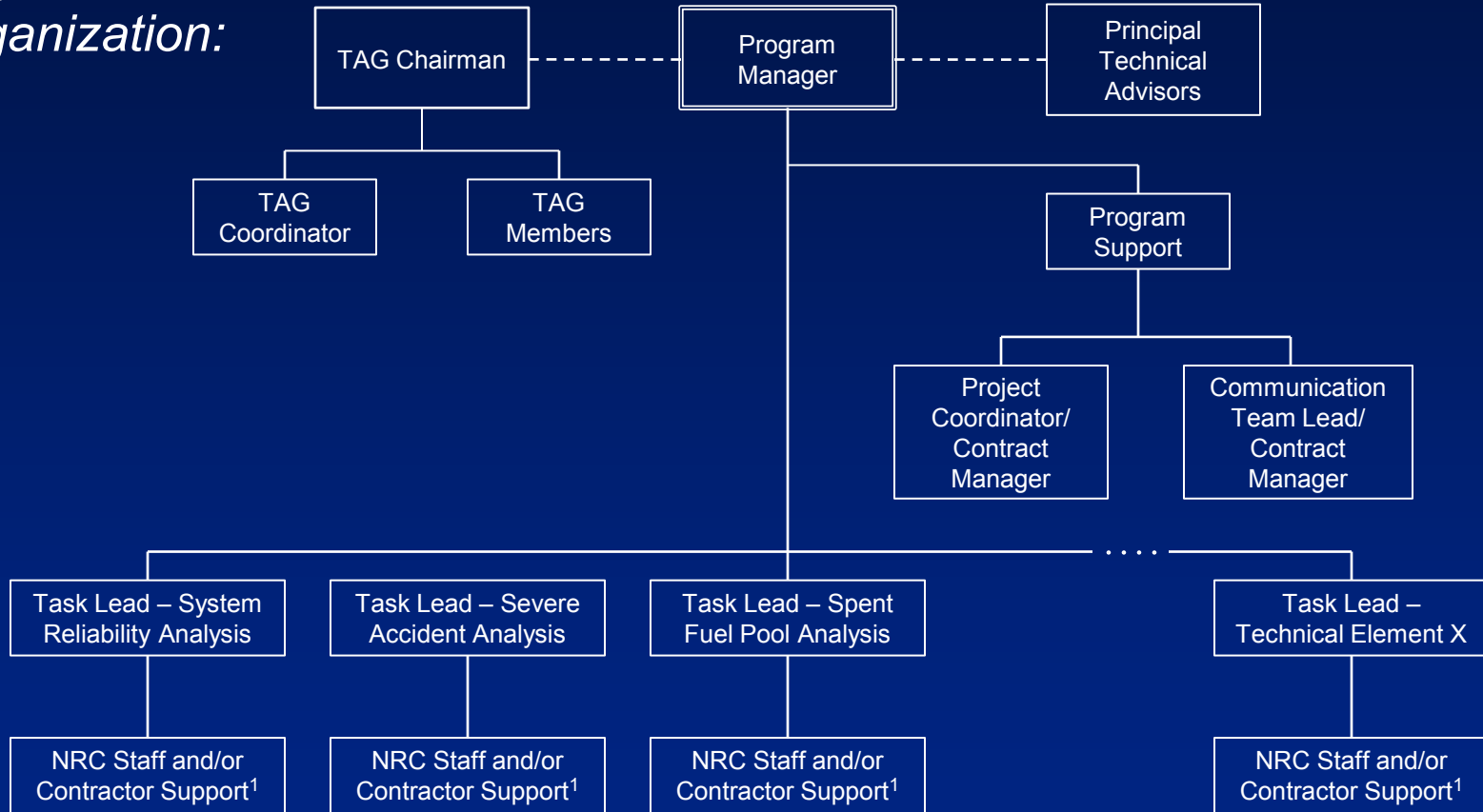
Fiscal Year	NRC Staff Resources	Contractor Resources
2012	3 FTE	\$1.0M
2013	8 FTE	\$2.0M
2014	7 FTE	\$2.0M
2015	4 FTE	\$0.5M
2016	2 FTE	\$0.5M
TOTAL	24 FTE	\$6.0M

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:



¹NRC 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??