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2 UNITED STATES NUCLEAR REGULATORY COMMISSION
3 BRIEFING ON FIRE PROTECTION LESSONS LEARNED FROM
4 SHEARON HARRIS

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6 TUESDAY

7 NOVEMBER 3, 2009

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9 The Commission convened at 9:30 a.m., the Honorable
10 Gregory B. Jaczko, Chairman, presiding.

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12 NUCLEAR REGULATORY COMMISSION

13 GREGORY B. JACZKO, CHAIRMAN

14 DALE E. KLEIN, COMMISSIONER

15 KRISTINE L. SVINICKI, COMMISSIONER

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1 PANEL 1: INDUSTRY REPRESENTATIVES

2 JOSEPH W. DONAHUE, Vice President Nuclear Engineering & Services,
3 Progress Energy Carolinas, Inc.

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5 DAN PACE, Senior Vice President, Engineering, FENOC

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7 KEN CANAVAN, EPRI

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9 PAUL GUNTER, Director of Reactor Oversight, Beyond Nuclear

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1 PANEL 2: NRC STAFF

2 BILL BORCHARDT, EDO

3 JACK GROBE, NRR

4 ALEX KLEIN, NRR

5 DONNIE HARRISON, NRR

6 MARK SALLEY, RES

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

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3 CHAIRMAN JACZKO: We will begin then, we
4 ask our guests to come to the table. We have today
5 I think -- this is one in a series of meetings that
6 the Commission has held on the issues of fire
7 protection. Last year -- a little over a year ago --
8 we held a meeting and I think one of the items that
9 came out of that was a recognition and a direction
10 to the staff from the Commission to go back and look
11 at and to start cataloging and get a better
12 understanding of what we were considering to be a
13 baseline for where we are in fire protection and how
14 we would be clear that we were making progress in
15 fulfilling our responsibilities to ensure that
16 plants address this issue in a safe and appropriate
17 way.

18 I think today we certainly are at a significant
19 point in our efforts to address this issue.

20 There are effectively I think three or four
21 significant issues: the multiple spurious
22 actuations, the use of operator manual actions, the

1 long term use of interim compensatory measures, and
2 other types of unapproved exemptions. Those are
3 really the challenges I think that we have in the
4 fire protection area.

5 As we stand today I think we are on the cusp of
6 making significant progress in a variety of those
7 issues. The staff recently issued the Reg Guide on
8 multiple spurious actuations that will begin a
9 six-month clock for licensees to identify or develop
10 their approaches for resolving that issue.

11 The staff has at this point we should have all the
12 responses on the operator manual actions from
13 licensees. The challenge now will be to verify the
14 issues that have been corrected in that area have
15 been corrected appropriately.

16 Then of course we have and will hear today
17 discussions about our progress in approving license
18 amendments or reviewing license amendments for the
19 two pilot plants that are transitioning to NFPA 805.

20 As I've said many times I continue to believe that
21 that's the right solution for everyone and I think
22 today I hope to hear from all of you about what your

1 thoughts are and whether that's the right approach
2 and what the challenges are and if there are
3 weaknesses with that approach how we can improve it
4 so I look forward to hearing from stakeholders first
5 and then after that we will hear from the staff. Any
6 comments from my fellow Commissioners?

7 COMMISSIONER KLEIN: I think that the NFPA
8 805 is probably been challenging both for the
9 industry and for our staff and I'd like to
10 compliment the industry and the staff for both
11 working hard to trying to resolve this.

12 It turns out it's more technically challenging than
13 we thought when it begin and I think from my
14 perspective this may be an area where one size
15 doesn't fit all.

16 I think different plants will have different
17 requirements and I look forward to your
18 presentations.

19 CHAIRMAN JACZKO: Okay, then I think
20 we will begin with Mr. Donahue.

21 MR. DONAHUE: Hello, my name is Joe
22 Donohue, I'm presently the Vice President of Nuclear

1 Oversight and I recently changed positions and I am
2 pleased to discuss with the Commissioners the status
3 of the Harris pilot.

4 What I plan to cover today on my first slide is
5 basically I plan to talk about the Harris fire
6 protection status. I'll talk a little bit about the
7 transition results and then some insights going
8 forward.

9 I think you'll hear today as the panel from the
10 utilities talk, I think we did underestimate what it
11 was going to take to implement both the fire PRA,
12 the licensing actions, the NFPA 805 and really you've
13 got to lump all of those together and we sort of
14 lump them in discussions we'll call NFPA 805 but
15 it's all of those.

16 The transition costs from our initial estimates have
17 doubled, in the case of my utility, we estimated it
18 with modifications to be near \$40 million and it
19 will be near \$80 million when we're done and more
20 important is not so much the money is the pure
21 man-hours that's going in to the transition.

22 The PRA cost itself -- one of the things when people

1 think about NFPA 805 we not only piloted the 805
2 transition we also piloted the Reg Guide 1.200, Fire
3 Reg Guide 6850, Fire PRA, and we also piloted --
4 well soon to be piloted -- the transition so we'll
5 talk a little bit about that.

6 Next slide, please.

7 The Harris NFPA 805 status we have responded to the
8 RIA responses and Supplement 3 was submitted in
9 October 2009. We had over 140 PRAs, we had lots of
10 engagement with the staff, we had lots of engagement
11 with the staff during the pilot period.

12 Obviously as the Reg Guide 1.205 and other what we
13 exactly we wanted to see in LAR and exactly to see
14 in the PAR documentation did cause us quite a bit of
15 re-work.

16 We are on track for program implementation in
17 mid-2010. We expect the SER from the staff in first
18 quarter of 2010 we will then implement the process
19 with license conditions to complete modifications
20 sometime in several months after receiving the SER
21 so mid to the summer of 2010.

22 We are committed on other actions to complete our

1 modifications at the Harris project by 2010, by the
2 end of 2010.

3 We are on track and do plan to commit those
4 modifications and then we will be in a 100%
5 compliance of the implementation of the rule,
6 implementation of the LER and the modifications that
7 go with those.

8 Next slide, please.

9 Progress of our fleet status, one significant thing
10 we do have to keep in mind as I have said we piloted
11 the development of an LER, the transition, the
12 methodology with both NEI, the industry and the
13 staff, we piloted the submittal process getting the
14 Fire PRA through various peer reviews in the
15 documentation of those.

16 The last remaining piece that we cannot
17 underestimate is the actual transition of 805 at the
18 site, transition from the staff to the Regions for
19 inspections in ensuring we minimize subjectiveness
20 in the inspection process and then piloting the
21 incorporation of the 805 process into the STP
22 process so that it all comes together and those are

1 a phase that we need to keep focus on.

2 I do believe we have a pretty good understanding

3 now.

4 The licensing process we have to drop it all the way

5 through to completion.

6 We are incorporating lessons learned in our fleet

7 response we have three other plants that are being

8 done in parallel.

9 We are incorporating the LERs and we're

10 incorporating the Rev 1 to RG 1.205.

11 It will cost us six to nine months to lay in our

12 next unit.

13 We are reassessing our schedules as a company, we

14 are committed to the 805 transition.

15 But we have to reassess our schedules as we

16 pull things together and incorporate the lessons

17 learned into our next non-pilot plants and we'll

18 also incorporate what we find as we move into the

19 inspection process which we realize we are the pilot

20 for that also.

21 Next slide please.

22 Quickly the Shearon Harris Fire Protection

1 improvements over 5,000 or 4,000 scenarios are now
2 evaluated.

3 This is by far the most complicated computer
4 modeling and fire modeling that I've ever been
5 involved in.

6 We originally had an internal events 40
7 scenarios, we're modeling near 4,000 for the detail
8 that we added to our model.

9 We will reduce the reliance on manual actions.
10 Many of our manual actions go to defense-in-depth,
11 they're still there but we do not need to rely on
12 them anymore so they're in the procedures as defense
13 in-depth and those ones which the few that we do
14 have are part of the LAR and will be
15 approved as part of the SER as we accept that.

16 The NFPA-805 transition and the modifications have resulted
17 in overall plant risk reduction at Harris and that
18 may be something that is plant unique and condition
19 unique to each of the individual plants. In our case
20 we've upgraded and can adequately take credit
21 for the Hemyc and fire wrap barriers.
22 We've upgraded those, in addition many of our mods

1 are in that area. More importantly, we're adding
2 incipient fire detection to bring on the onset of a
3 potential fire in cabinets which were not there.
4 That is not something we had at one plant. At Harris
5 we did have the already available, at Robinson or
6 more importantly we're adding a diesel generator
7 alternate seal injection which has huge internal
8 events risk safety as well as fire protection
9 safety.

10 So again for Harris we have improved safety.
11 28 total mods have been completed to date, 45 is the
12 total number which will be done by the end of 2010,
13 seven of which need to be tied in during the outage
14 and that's why it's the end of 2010.
15 So 45 is a total mods we're doing.

16 Next slide, please.

17 One key point as you actually implement 805 is now the
18 decision-making process during the post- transition
19 and that's again a very important part of 805 is the
20 ability to allow us as times change and as the
21 plants go on that we can have a process to make
22 changes in the fire protection process.

1 As we do it we will ensure fire defense in depth.
2 This is not a one size, one item just NFPA 805 you
3 really integrate classical fire protection safe
4 shutdown analysis Fire PRA which we always sort of
5 focus around the Fire PRA in other aspects.
6 So we'll also use multiple input sources as we move
7 forward.

8 Now all of those things bring some potential for
9 subjectivity and that's the part we have to work
10 with as we integrate all three of those but that is
11 an important part of NFPA 805 transition. And risk
12 informed post-transition fire change processes are
13 a very important part, it's part of the code it's part of the regulations
14 and we have several FAQs in that area and that will
15 be another area that we have to demonstrate jointly
16 between the staff and the utilities as we move
17 forward.

18 The key here is putting a focus on plant safety based
19 on very specific plant information on ignition
20 source information for that plant.

21 Next slide, please.

22 There has been some improvements recently over the

1 last 6 to 8 months as we've worked through the NRC
2 guidance documents, in particular the original
3 versions of Reg Guide 1.205.

4 We had some concern with the utilities, we are
5 closer to allowing the peer review process of Reg
6 Guide 1.200 there have been improvements in the
7 latest rev of that.

8 The industry appreciates that.

9 Still some work has to be done but that's an area we
10 have improved.

11 We have had improvements in some movement in some
12 of the FAQs, I think you'll hear, they're some areas
13 that we need to continue to look at even some of the
14 open FAQs, some of the FAQs that .
15 are being perceived as being closed
16 which are really more in an interim status.

17 But in particular the FAQ 0608 which has to do
18 the engineering equivalency evaluations which is the change
19 process post-805, there has been some clarification
20 in those that are beneficial.

21 There was clarification in the documentation needed
22 for recovery actions.

1 Basically going from shutdown outside the control
2 room in Appendix R space to the same shutdown
3 outside the control room to NFPA 805 -- how much
4 documentation that you had a show on there so there
5 has been some improvements with those.

6 Next page please.

7 Going forward, you know, we really have to continue
8 to strive on the stable regulatory environment and I
9 think you'll hear that from several of my peers. And
10 again as I mentioned before we need to pilot the
11 inspection process, we need to minimize the
12 subjectiveness as we take a look at both the
13 inspections and as we look at 6850 and the change
14 processes as we go forward and how that's all
15 incorporated in other regulatory processes including
16 the SDP process.

17 We have to also keep in mind that we need to have, and
18 the key there is a consistent application of 6850 as that document evolves
19 as it is today incorporating FAQs in anything that
20 we do. Really its around many of the issues that are
21 in the 6850 arena.

22 Next page please.

1 A fire PRA conservatism realism you can call it
2 either of those. I really like the word realism.
3 The key area for us is continuing to focus on fire
4 growth and the heat release rates in electrical
5 cabinets that really is our priority. It is where
6 we're putting incipient fire protection and it is an
7 area that several others will talk about that we
8 need to continue research on that
9 minimizes some of the realism in the model.

10 And also how we treat internal events which is a
11 very mature over many years of gathering data
12 typifying the way we operate our plants today with
13 the fire PRA which is a little bit less mature and
14 how we integrate those and how we add those to or
15 don't add those to or treat those as fire hazards.
16 With that, I'm available for questions.

17 CHAIRMAN JACZKO: Well, thank you, we
18 appreciate your perspectives and we'll now hear from
19 Mr. Pace who will talk about a plant that is not
20 currently a pilot plant but is thinking about
21 transitioning to NFPA 805 so we'll hear about his thoughts.

22 MR. PACE: Thank you Chairman.

1 I was asked to come in and talk to you a little bit
2 about those that follow the pilot and so my
3 comments today are going to be really as I view some
4 of the generic concerns with those post- pilot
5 plants more than with any unique specific item for
6 one of my plants.

7 Next slide.

8 A little bit about who we are FirstEnergy .I have
9 four units, two relatively new as far as our
10 industry goes and two mid- seventies plants, two
11 Beaver Valley units which they are sort of in the
12 order that I'm approaching 805. Davis-
13 Besse and Perry which is a relatively new
14 BWR. Next slide.

15 So why did we decide to transition to 805?
16 I was sort of the advocate for the post- transition
17 plants and in the job I have now I look at a few
18 items to force my decision. One is I looked at it as
19 an opportunity to improve safety through a risk
20 informed approach.

21 Having lived through the power PRAs it was clear
22 that we gained some insights that weren't at all

1 intuitive coming up in a deterministic world that
2 the model showed us that this is something that
3 you need to focus your attention on.

4 Secondly, I've had a long career in fire protection
5 and I don't like to admit to everybody starting
6 early in my career as a fire engineer in startup and
7 dealing with that.

8 I was design manager at the first Appendix R pilot.
9 I was a director at the first fire protection and functional
10 inspections in the nineties so I've followed these
11 issues for a long, long time and I looked at it as
12 putting it into an analytical tool maybe gave us our
13 best opportunity to resolve the long-term legacy
14 issues in the fire protection arena.

15 I looked at it from practical standpoint.
16 The fleet I was working in the fleet now had a very
17 diverse approach to fire protection at each of the
18 sites and I looked at it as an opportunity to bring
19 the fleet into alignment and consistent method of
20 handling fire protection and we didn't have very
21 strong PRA resources at the time.

22 I know this is an opportunity to leverage to new

1 people coming into the business and to grow the PRA
2 capability of the company.

3 So those are sort of the things that said we will
4 embark down this path.

5 Next slide.

6 We did an initial feasibility study for each site.

7 It felt like something we could accomplish.

8 I was aware from my perspective that if we approach

9 this in a pragmatic way we ought to be able to do

10 a fire protection code reconciliation including a PRA

11 model for around a million dollars.

12 NEI had said 3 million which I thought was a

13 ridiculous figure.

14 But we'll see more to come.

15 We sent a letter of intent in, in December of 2005

16 and it implemented a fleet approach.

17 We said we would pilot the Beaver Valley Unit One

18 followed with Beaver Valley Unit Two, followed then

19 with Davis-Besse and then with Perry.

20 Based on their age and potential significance of their

21 issues so we would look at the pilot, implement it

22 at Beaver then Besse then Perry.

1 Next slide.

2 So at Beaver Valley our initial estimates after we did
3 the project reports and things were about \$7 million
4 for two units, so three and a half-million dollars a unit,
5 closer to the NEI estimate, that includes no NRC
6 review fees or modifications, that's just to build
7 the program.

8 As of this year we're currently estimating a cost of
9 \$15.4 million also including no NRC review fees and
10 no modifications.

11 That's an uncertain number because as you'll see
12 some -- we still believe that there are a lot of
13 unknowns that we have to deal with.

14 Our unit one screening model was done some time ago
15 and we embarked on fire area modeling trying to
16 stay just behind the pilots. In hindsight that
17 may not have been a wise approach because that's
18 caused a great deal of recycling of resources. As the
19 pilot adjusted we became the tail on the dog that
20 was whipping us around.

21 As a matter of fact one of my contractors said to me
22 one day, "We'll keep doing this until you guys run out of

1 time or money", to give you a mental image of what
2 we're going through this, it's recycling.

3 Unit two we're about 30% complete. We're really
4 trying to watch unit one and the pilots to see where
5 we launch next with unit two, but probably quite
6 capable of pulling Beaver Valley both units across
7 within the projections of the industry.

8 Next slide.

9 The Davis-Besse transition started a little later.
10 We had submitted in '05 assuming a three-year
11 transition for each plant so we should have
12 been through with Beaver in early '08.
13 We would have had Besse done in the fall of '09
14 about this time and be starting on Perry.

15 As it turns out it's really sort of stalled the
16 Besse activities because we're throwing good money
17 after bad in some cases to see where the pilots land
18 and then what sort of experience we have in
19 transitioning our Beaver Valley unit.

20 After that Perry will go after Beaver and Besse
21 has been submitted and then as I said it will be in
22 a much better condition from the deterministic fire

1 protection standpoint.

2 Next slide.

3 There are four issues I'd like to discuss with you. One is
4 the methods used in selecting the modeling inputs,
5 we think is a concern; schedule overlap between
6 pilots, and post- pilot transition plants;
7 our solution as an industry and a regulator, I
8 believe, has introduced new challenges to us; and
9 cost-benefit of the 805 transition.

10 Next slide.

11 In the methods arena some of the inputs arguably are
12 deterministic based and when you put deterministic
13 inputs into a probabilistic model you get ridiculous results.
14 That's some of the issues you see the staff working
15 back and forth with the industry on, it's trying to
16 bring some reconciliation to what's the appropriate
17 input and parameters to run in the model.

18 The model is a fairly straight forward tool. It's a
19 mathematical model but poor inputs in will result
20 in poor outputs.

21 This would yield unrealistic modeling outputs. It's
22 akin to the engineers when they do calculations and

1 they come back and tell me the car was going
2 337 miles an hour when it hit the wall which is
3 an impossibility.

4 Therefore the results aren't comparable to the power
5 models.

6 Since they were built with different inputs
7 comparing the fire models that we're building today
8 with the power models that we're running today is
9 akin to comparing tomatoes to apples, they're not
10 even in the same variety.

11 And then some of the existing standards that we've
12 used in power models don't translate well to what
13 we're trying to deal with in the fire modeling arena.

14 Next slide, please.

15 As far as the scheduling overlap since the pilot
16 plants had such a difficult time in defining the
17 course we're going to follow, their schedule has
18 slipped. As I said earlier we should have been
19 through Beaver in '08, Besse in '09, Perry next
20 year.

21 We're struggling with Beaver because we're still
22 trying to understand the outputs of the pilots.

1 Since we laid out a fleet approach you can imagine
2 we've got a bough wave going and now all three plants have
3 fallen on top of each other which is a physical
4 impossibility to manage, so we're we considering those
5 schedules.

6 It has resulted in substantial rework.
7 These models are very complex and the mental picture
8 I have is building one of these child's models of dominoes
9 and filling the room with them and just about the
10 time you're through with the Domino kick over model
11 we decide we'd like to put an extra dot on each of
12 those dominoes.

13 So we have to sweep them all down and redot them and
14 rebuild it, that's akin to the cycling that we're trying to
15 build in these very complex models so we lost the
16 fleet benefit and it's challenging the limited resources
17 which were limited even with the schedule we laid out.

18 Next slide, please.

19 As I said I believe the solution has possibly
20 introduced new challenges.

21 We, the industry, and the regulatory body set out to
22 solve manual operator actions and circuit analysis

1 issues that you led out with Mr. Chairman at the
2 beginning.

3 And we're coming to realize we have to solve the
4 circuit analysis issues to solve the fire PRA
5 issues.

6 So the deterministic solution of those issues has
7 been working in parallel. In addition we've added
8 more complexities in the modeling confusion so we start
9 out with two issues and arguably now have eight or
10 ten to solve as an industry.

11 Next slide.

12 So in the cost-benefit arena obviously our original
13 assumptions were no longer valid the deterministic
14 approach is gaining certainty now.

15 We know more about how to do circuit analysis now
16 which once again I say has to be solved to do the
17 PRA approach.

18 So we may well have been better served to put the
19 15, 18, 20 million dollars into doing the
20 deterministic approach and making modifications as
21 necessary to comply rather than building a more complex
22 analytical model.

1 Analytical models do not build margins at nuclear power
2 plants.

3 Next slide.

4 In summary I believe our risk informed approach
5 was good intention, we all set up to try to frame
6 an analytical disagreement into an analytical model
7 we could agree on.

8 We still need to resolve some of these open
9 technical issues on what modeling inputs we need to
10 assume and make it more akin possibly to the power
11 models.

12 I think the front end transition plants will
13 complete. Much like Beaver Valley, we're in this
14 poker game and all the chips are in.

15 The follow-on plants will much more likely have
16 to re-evaluate their position.

17 Thank you.

18 CHAIRMAN JACZKO: Thank you I appreciate
19 those insights and I will now turn to Mr. Canavan
20 who will talk a little bit about the research
21 activities and the work that EPRI has been doing in
22 fire PRA and other issues.

1 MR. CANAVAN: Thank you, Mr. Chairman,
2 Commissioners.

3 I'm the Manager of the Risk and Safety Program at
4 the Electric Power Research Institute and I want
5 to thank you for the opportunity to brief you and
6 other interested parties on where we are or lessons
7 learned realized during the performance of the PRAs in
8 support of the NFPA 805 transition.

9 We've been at several briefings and I titled my
10 presentation as lessons learned after Joe Donahue's
11 presentation because I think there's some important
12 lessons that we can learn but before we get to that
13 I thought I would give a brief history and when I
14 say brief I mean brief history on Fire PRA methods.

15 I'd like to correct my initial bullet I wrote 20
16 years and then last night as I was thinking about it
17 it's probably not quite 20 years ago where we
18 started the wide use of fire PRA methods maybe even
19 more like ten.

20 But that was in the performance of the individual
21 plant examinations for external event vulnerabilities
22 or the IPEEE and that was really the first time that

1 we wide-spread used fire PRA methods.

2 Since that time those methods have been modified by
3 NRC RES and EPRI and they are published in NUREG
4 CR 6850 and EPRI 1011989 and the EPRI number is too
5 complicated to say so we usually refer to it a 6850
6 and guess we should re-number our report.

7 But as we mentioned in other Commission briefings we
8 discussed that the 6850 methods were not fully
9 trialed prior to their implementations in the pilots
10 that our transitioning to 805.

11 And as expected with any complex methodology we
12 expected and did indeed run into some issues with
13 the methods.

14 You've heard some of them over the last few
15 Commission briefings.

16 And over the last 18 months we worked with the staff
17 and other stakeholders including utilities, owners
18 groups, consultants and NEI to improve those
19 methods.

20 We've had some successes and some setbacks.
21 Today's presentation isn't going to focus on
22 particular issues or their successors or their

1 failures, but rather try to focus on answering the
2 questions: how can we do this a little better, how
3 can we refine the methods more efficiently and more
4 effectively and I hope my next couple of slides
5 address those questions.

6 Next slide, please.

7 Prior to the start of the NFPA 805 pilots and
8 probably in the beginning of those transitions as
9 well at least for a short duration, the PRA methods
10 developments and handling of the issues were
11 performed by a relatively small group of researchers
12 who were the authors of much of the material that is
13 in 6850.

14 This group addressed those changes in a relatively
15 lengthy response window and as you heard from my
16 colleagues as the pilots progress that lengthy
17 response window changed and became a little bit
18 shorter and also had quite a few additional
19 stakeholders. They included the NRC reviewers,
20 utility project managers, utility PRA personnel,
21 consultants, senior managers all became increasingly
22 involved in the identification and the resolution of the

1 frequently asked questions or the fire PRA methods
2 issues.

3 The evolution of the process significantly expanded
4 a number of people directly involved in the
5 development of consensus approaches and they added
6 an element to time pressure as well due to
7 the tight implementation schedules associated
8 with 805.

9 The group dynamics shifted to a higher stress
10 environment but more importantly than the higher
11 stress was that you had a larger group of
12 stakeholders with different and sometimes divergent
13 goals such as the need to preserve the ease of
14 review or schedule adherence with the desire to get
15 a guaranteed regulatory accepted method and others.

16 The group dynamics were an extremely inefficient use of
17 the resources accompanied with some unrealistic
18 expectations that these competing goals could be
19 met simultaneously.

20 And another common result that we had was the
21 compromise method which I'll talk a little bit on
22 the later slide.

1 Next slide, please.

2 A second lesson that we learned is that the method
3 shouldn't be developed in abstract and many of our
4 PRA issues came from a single plant.

5 When developing resolution to the issue inevitably
6 the question "but what if" arises.

7 If I could count the number of times we did the "but
8 what if" it would be a very large number.

9 The questions usually asked and we have a reasonable
10 solution to a problem and that's proposed and a
11 well-intentioned participant or stakeholder asks in
12 the interest of expanding the applicability of the
13 solution "but what if".

14 The goal was to be a little bit more comprehensive
15 which is an honorable goal.

16 But this is our classic snatching defeat from the
17 jaws of victory.

18 Where the "but what if" turns into a situation where
19 we address the significantly number of hypothetical
20 situations that may or may not have occurred in
21 experience and may or may not be applicable to the
22 next series of fire PRAs we do.

1 Next slide, please.

2 All these lessons are related and in less than three
3 the larger group of stakeholders with the best of
4 intentions try to ensure that their goals are met in
5 the resolution and what tends to happen is what I've
6 termed a compromise method.

7 Compromise methods are usually conservative and
8 bounding inputs because they're trying to bound the
9 goals of all the folks involved in developing that
10 solution.

11 They also have significant elements of the "but what
12 if" philosophy.

13 In the past after that conservative method is
14 developed and bounding inputs are applied then significant
15 resources are expended in the form of data
16 collection, engineering analysis to attempt to
17 increase the realism of the models and to date we've
18 had sort of a spectrum of success here and some of
19 the interim methods that are produced still don't
20 comport with data and experience.

21 Several of the interim solutions produced will
22 need to be revisited or refined as the they're

1 applied to the wider range of plants.

2 These are three lessons that I've listed, other
3 lessons could be provided in including some of those
4 that are very positive.

5 These lessons were chosen because these are
6 the lessons that we can get the most benefit at
7 improving the process so you heard about all the
8 process problems now we're focusing in on what are
9 the things we can do to improve.

10 There are a number of positive outcomes that weren't
11 discussed in this presentation and given the fact
12 that we probably will proceed with fire PRAs
13 whether or not they're for NFPA 805 or just for risk
14 informed performance-based regulation in other areas,
15 we probably will continue to develop these methods
16 so it's important that we address these lessons
17 learned and mature the methods as quickly as we can

18 In the area of the future of fire PRAs methods
19 we should use the best available information and
20 analysis.

21 And in that vein we should look at all the evidence
22 and analysis which would be judged on its merits and

1 included when it has reasonable basis and provides
2 the best information and we can monitor it.

3 The methods inputs and results should comport with existing
4 experience and current operating experience to provide assurance that the
5 model is a reasonably accurate representation of the as built,
6 as operated plant.

7 This in turn leads to increased acceptance of the model which is important if
8 we are going to be applying this in risk informed performance-based regulation.
9 So basically the previous history that we are aware of should comport well with
10 what we see today.

11 Conservative in the process should be limited to the
12 decision-making guidance and criteria. And the
13 methods and input should be sufficiently dynamic to
14 allow us to improve them over time and encourage good
15 behavior by accurately reflecting safety.
16 improvements in a corresponding risk reduction.

17 Next slide, please.

18 The fire PRA action plan is our solution to these
19 issues. The fire PRA action plan consists of a matrix of
20 fire PRA method issues including a characterization of the issue, the issue
21 owner, a schedule and resources. Along with the matrix a new approaches
22 is proposed which addresses lessons learned in an

1 attempt to improve the process.

2 So the new approach begins with small teams of
3 knowledgeable experts that develop a solution which is then
4 applied to several plants.

5 The team develops these solutions not necessarily
6 for the method itself to be approved but rather for
7 it to be approved in context in the application.

8 This isn't to say that the methods can't be reviewed
9 or not available for review or they are not stand alone
10 but this is to say that their best reviewed when
11 they're done in context rather than the abstract as
12 we've seen what can happen with the "but what ifs".

13 Reviews and refinements of the methods are
14 initially provided by the application plants
15 so when they are being applied we can look at that
16 application and refine the methods if necessary.

17 They're also then reviewed and input received via
18 independent reviews so there is an independent peer review
19 required. It's part of the fire PRA process.

20 Another opportunity for review and approval method
21 would be during a request for additional information
22 process and then finally the approval in context

1 would be provided in the NRC safety evaluation
2 report.

3 That provides sort of a high level outline of how we
4 could improve the process of addressing these
5 findings.

6 Next slide, please.

7 I don't intend to review this slide in any detail
8 but I did want to mention that these are the
9 activities that are listed on the current fire PRA
10 action matrix.

11 The items listed in red are those interim solutions
12 that will need additional analysis for complete
13 closure or to provide applicability to a wider range
14 of plants.

15 The remaining issues that are items that we have
16 identified but we don't yet have detailed approaches
17 for.

18 That completes my prepared remarks. Thank you.

19 CHAIRMAN JACZKO: Thank you, I appreciate the
20 comments. I'm sure the Commissioners will have
21 lots of questions for you and the
22 others.

1 We'll turn now to our last speaker Mr. Gunter with
2 Beyond Nuclear.

3 MR. GUNTER: Thank you Commissioner.
4 My name is Paul Gunter Director of Oversight Projects for Beyond
5 Nuclear and we really appreciate the opportunity to participate as
6 public stakeholders.

7 The Browns Ferry fire in 1975 demonstrated as
8 reality that a significant fire can occur at a
9 nuclear power station and that a fire can
10 significantly challenge the safe shut down
11 capability of the reactor.

12 The Browns Ferry fire further demonstrated that even an
13 incalculably improbable source of ignition can lead
14 to a significant fire in reactors operating today.

15 The near catastrophic experience proved so harrowing
16 that the Nuclear Regulatory Commission responded by
17 dramatically amending and expanding its fire
18 protection philosophy to include the development of
19 General Design Criteria 3, Branch Technical Position
20 9.5.1 and the promulgation of law under Code of
21 Federal Regulation for minimum fire protection
22 requirements to conservatively ensure that a level

1 of compliance exists at all nuclear power plants.

2 Unfortunately, as witnessed through my personal
3 experience since 1991 before the Commission, one critical
4 analyzed area of these fire safety requirements in
5 nuclear power plants was not properly implemented
6 nor subsequently enforced.

7 Namely for the large number of Appendix R III G.2
8 fire areas requiring qualified physical and passive fire
9 protection features for control room power, control
10 and implementation electrical circuits to reasonably
11 assure that the redundancy for reactor safe shutdown
12 equipment cannot be destroyed by a single fire.

13 Apparently after 29 years of effort, such regulatory
14 assurance appears to be overly burdensome and no
15 longer considered reasonable, attainable by industry
16 nor enforceable by the Federal agency without a
17 large number of exemptions.

18 Given the widespread level and duration of
19 non-compliance, the infrequency of serious fires at
20 nuclear power plants is at the same time a blessing
21 and a curse.

22 A blessing in that, to date, more significant fires

1 have not challenged nuclear power stations safe
2 shutdown operations, a curse in that the lack of
3 such experience leaves many broad areas of
4 uncertainty in an aging industry.

5 The expanse of this uncertainty includes not only a
6 lack of experiential knowledge base but introduces
7 questions and disputes involving variability,
8 randomness, indeterminacy, judgment, approximation,
9 linguistic imprecision, error, and the unreliability
10 of human behavior and the significance surrounding
11 fire safety issues.

12 These broad uncertainties play a major role in our
13 discussion and our concerns today regarding the
14 public's confidence in the proposed transition from
15 the ongoing failure to achieve compliance with a
16 prescriptive fire code to the optional NFPA 805
17 Performance-based Standard for Fire Protection for
18 Light Water Reactor Electric Generating Plants.
19 Because of these uncertainties we remain skeptical
20 of the outcome of the NFPA 805 transition and the
21 implementation process.

22 I would like to focus my presentation on the issue

1 of fire modeling.

2 Verified and validated fire models used to predict
3 the extent of fire damage from a range of fire
4 sources are held up as an integral, indeed essential
5 part of the transition to NFPA 805 in determining
6 the survivability of reactor safe shutdown equipment
7 in lieu of protecting that same equipment through
8 compliance with Appendix R III.G.2 through the qualified
9 fire barriers.

10 Given the potential high safety consequence arising
11 from a fire that knocks out the control room
12 operation and maintenance of reactor safe shut down,
13 accurately capturing all of the proper fire
14 scenarios becomes crucial to public safety.

15 We argue that fire modeling remains a significant
16 limitation to NFPA 805 and fire safety analysis and
17 design for power reactors.

18 Published literature continues to warn that fire
19 modeling is still in its developmental stages with
20 its associated uncertainties.

21 In our view, that remains a significant stumbling
22 block to a reasonableness assurance and a continued

1 impasse to effective enforcement policy for future fire
2 safety issues arising in NFPA 805 nuclear power
3 plants.

4 It remains very difficult to employ a computer
5 generated fire model with a high level of confidence
6 so that it makes a valuable contribution to
7 real-world decision-making as opposed to leading to
8 inaccurate and inappropriate interpretations that
9 can leave power reactors vulnerable to fire.

10 The European experience in fire modeling further
11 suggests that different fire model users can produce
12 very different results even when using the same
13 probabilistic model and applying it in the same
14 case where risk estimates
15 can differ by several orders of
16 magnitude and are crucially based on the users'
17 knowledge and experience or lack thereof.

18 A number of identified error sources and gray areas
19 in fire modeling include: the lack of reality of the
20 theoretical and numerical assumptions used in fire
21 models. The assumptions used
22 in field models are approximations

1 to real-world experience from a
2 particular fire; lack of fidelity of various
3 numerical solution procedures; direct errors
4 in computer software where the software will not be
5 an accurate representation of the model and numerical
6 solutions procedures; faults in computer hardware
7 where a fault can exist as a result of the mistakes
8 in microprocessors; significant and undetected
9 mistakes in fire model applications while inputting
10 into the model.

11 These potential error sources can remain significant
12 challenges to both industry and regulator that
13 cloud, complicate and further prolong the
14 development of a fire safety resolution path and
15 improved enforcement policy.

16 Given the troubled history of NRC's official policy
17 of non-enforcement which spans decades old fire
18 protection violations it begs the question if a
19 transition to NFPA 805 helps or further hinders the
20 institution of NRC enforcement policy on fire
21 protection.

22 The failure of the NRC to effectively take

1 enforcement action on the violation of inspectable
2 prescriptive requirements, widespread abandonment of
3 subsequent corrective action programs and failure to
4 follow through with fire safety confirmatory action
5 orders does not lend to building public confidence
6 that the agency can effectively address violations
7 of an arguably more nebulous and difficult to
8 inspect performance-based standard, potentially
9 involving disputes between staff, industry and
10 public over any number of areas of uncertainty
11 identified.

12 Finally, there is the concern that malevolent acts
13 are beyond the scope of NFPA 805.

14 The risks and consequences associated with sabotage
15 cannot be accurately analyzed by probabilities nor
16 can they be modeled.

17 As we have raised to the staff, we see a significant
18 fire safety disconnect in a shift to
19 performance-based risk informed fire protection
20 regulation that does not address security concerns
21 when coupled with ongoing industry wide noncompliance
22 with prescriptive fire codes for Appendix R

1 III.G.2 fire areas.

2 The same nuclear power stations have long been
3 identified by national laboratory study to have been
4 inadequately evaluated in their design and
5 construction for the effects of explosion and fire
6 resulting from the impact of aircraft.

7 These same nuclear power stations have been further
8 exempted from any further mandatory aircraft impact
9 hazards analysis.

10 The security veil then falls to obscure from public
11 view how the risks of deliberate destruction of
12 reactor safety systems by fire are or are not being
13 addressed.

14 As a result the question remains in the public
15 interest community, is the Federal regulator
16 pursuing a compliance strategy to douse the flames
17 of a fire protection controversy or is it at long
18 last prioritizing the establishment and enforcement
19 of fire safety regulations to maximize public safety
20 margins during post- fire safe shutdown.

21 CHAIRMAN JACZKO: Thank you Mr. Gunter. I
22 appreciate your insights and we will now begin our

1 questioning with Commissioner Klein.

2 COMMISSIONER KLEIN: Thanks.

3 I will start in the order of the presenters so Joe

4 I'll start with you.

5 What were your most significant plant modifications
6 in Shearon Harris?

7 MR. DONAHUE: I think I would probably
8 categorize them in three areas.

9 One is we were able to by actual fire testing on
10 the fire barriers to determine for the exact plant
11 conditions and the exact configurations at Harris
12 what the barriers and how long that plant
13 would last and maintain the barrier. Then we have gone
14 in and made appropriate modifications and then took
15 credit for that real-life, real testing
16 conditions in the fire PRA models, so quite a few of our
17 models dealt with that.

18 Second, I believe the incipient fire detectors in
19 our cabinets will bring on the onset of any
20 instrumentation and control potential of fires and
21 no matter how we end up in the conservatisms and
22 realism of fire promulgation in the cabinets we will

1 have implemented those and I think third, probably the one
2 that I am most proud of with the staff, is the diesel
3 generator backup steel injection system which
4 addresses internal events safety while at the same
5 time fire safety for giving makeup capability during
6 a shutdown.

7 COMMISSIONER KLEIN: Could you tell me
8 again what your cost estimates were when you started
9 and what you've spent to date?

10 MR. DONAHUE: For the fleet for all four of
11 our plants with modifications was going to be near
12 \$40 million and right now were estimating about
13 \$82 million.

14 COMMISSIONER KLEIN: So about doubled from
15 what you said.

16 When you look at a specific plant and you look at
17 what you spent are you able to quantify the risk
18 reduction?

19 MR. DONAHUE: In the case of Harris which
20 we've got the peer review fire model the internal
21 events CDF has gone down by 20% predominately by the
22 seal injection fire. Our other units,

1 the expected modifications we're seeing, I would
2 call them more compliance related, we do
3 not have an actual number for our next plant which
4 is further along is CR3. But CR3 with its additional diesel generator
5 capability that it has is a relatively low profile
6 plant from a risk perspective so I don't expect to
7 see the gain that we got at the Harris project.

8 COMMISSIONER KLEIN: And what is the status
9 of the piloting the inspection process, where do you
10 and the staff currently lie?

11 MR. DONAHUE: I think that's probably a
12 question to best -- better ask the staff -- I do not
13 believe we have seen the draft inspection
14 guidelines.

15 I know there's been discussions going on with the
16 staff and the Regions and I think again that's where
17 as we get the SER we plan to deploy and get
18 into the implementation of 805 and welcome
19 piloting that part of the process, that's the third
20 leg of the stool that needs to be done successfully
21 for the rest of the industry and obviously for
22 ourselves.

1 COMMISSIONER KLEIN: So you haven't seen a
2 draft plan or anything?

3 MR. DONAHUE: I do not believe we've seen a
4 draft to date.

5 COMMISSIONER KLEIN: Dan you talked a little
6 bit about the different types of plants that you had, some
7 that were in the seventies and some in the
8 eighties, fundamentally is there a difference in
9 which ones might lend themselves more or less to NFPA
10 805 compared to a deterministic approach.

11 MR. PACE: There is a difference in how
12 much remediation needs to be done to solve the
13 original issues, those circuit analysis in the
14 manual actions required to comply with redundant safe
15 shutdown cabling area is differing on a mid-
16 seventies plant than it is on a late eighties plant
17 and I believe it's different between some of the
18 design AEs, NSSS firms.

19 I have a great deal of experience on the later
20 boilers and they're quite well-designed on
21 separation and require minimal impact to comply
22 with almost any reasonable deterministic role

1 on circuit analysis and have little or no manual actions.

2 Where as some of the PWRs in the mid- seventies.

3 they required significant manual actions and had

4 more circuit interaction issues.

5 Given that you can resolve some of these ambiguities in

6 these inputs and propagation parameters on a fire PRA and

7 make it a practical tool to use, it obviously would

8 lend itself better to a mid- seventies plant than a

9 more modern plant.

10 COMMISSIONER KLEIN: So it looks like you

11 started about four years to go to transition to NFPA

12 805, would your decision process be different

13 today versus four years ago?

14 MR. PACE: I have that decision to face.

15 We've got a basic fire PRA model on our Davis-Besse

16 unit, it would be what we envision a fire PRA model

17 to be four years ago and I get to watch and see how

18 the pilot comes down and what impact that has on my

19 Beaver Valley plant before I embark on Davis-Besse.

20 If we get pragmatic solutions that are comparable to

21 power PRAs out of the firm PRA modeling efforts

22 that are going on now then we'll likely proceed

1 with the fire PRA model at the other units as well
2 as other risk informed applications.

3 If we continue to have unrealistic outcomes to this
4 fire PRA modeling exercise then we will have to
5 reevaluate that.

6 COMMISSIONER KLEIN: If you look at the
7 two pilots being finished, and one earlier in 2010
8 and then another one may be in the spring of 2010,
9 how much time do you think it would really take
10 utilities once you have that better determination to
11 really do a NFPA 805 decision?

12 MR. PACE: Well if we were truly operating
13 pilots like we do processes and procedures
14 at our fleet plants we let the pilot run its course and
15 determine the lessons learned and then proceed with
16 certainty on our other plants.

17 So if this had progressed according to plan the
18 pilot would've completed in '07-'08 and then we had
19 a two to three year implementation because it takes
20 two to three years to implement the fire modeling on
21 a plant.

22 Where we are today with a plant like Beaver Valley,

1 once some certainty is brought to the rules, we're probably
2 10 to 12 months from having a completed product.

3 COMMISSIONER KLEIN: You had talked about
4 your cost differences have increased from what you
5 initially expected to what they are now.
6 What would you attribute to primary cost escalation?

7 MR. PACE: Primarily in recycling the model, we had a
8 as the architects like say a substantially complete
9 model two years ago that we've re-performed with
10 different inputs for initiation frequency, re-performed
11 with different propagation parameters, re-performed
12 for different fire areas for the last 24 months to the point where on
13 Unit Two and on Besse we have just stopped until some of the uncertainty
14 settles out on these decisions.

15 COMMISSIONER KLEIN: Well, Ken, you listed
16 on your slide eight several areas that needed
17 additional analysis and development.
18 What's EPRI doing for those?

19 MR. CANAVAN: As I mentioned during the
20 presentation and I can expand on it a little bit
21 here.

22 Those are the items that are in the fire action

1 matrix. Currently on each one of these items a plan is being
2 developed that includes the owner of the issue which
3 may not be EPRI it may get assigned to owners groups, consultants,
4 vendors. That issue will then be worked by a small
5 team.

6 In the matrix, it's getting a detailed action plan with resources
7 and schedules for completion and those are going to be
8 realistic schedules on what we think we can do given the
9 resources and the ability of folks to work on those
10 issues given that the same people who support
11 implementation and development of the fire PRAs are the ones
12 who also do a lot of the methods development. .So each one of these issues
13 will then be worked in accordance to that plan.
14 There may be a few that may be added as a result of
15 follow-ups plans as well.

16 COMMISSIONER KLEIN: So looks like you had
17 eight that were red in color?

18 MR. CANAVAN: Yes.

19 COMMISSIONER KLEIN: About how much is EPRI
20 spending a year to address these?

21 MR. CANAVAN: Costs vary, but we been about
22 in the million and a half to 2 million range over

1 the last couple of years and we expect in the future
2 to get significantly larger.

3 COMMISSIONER KLEIN: And of those eight
4 which is the top two?

5 MR. PACE: The top two are, actually Joe
6 had mentioned them in his presentation, the first
7 one is heat release rates and the second would be
8 the experiential data getting all the fire events database,
9 collecting and analyzing that data.

10 COMMISSIONER KLEIN: Thanks. Paul you
11 indicated a blessing and a curse regarding the
12 fires.

13 Do you think that the attention the industry and
14 the NRC is paying to the fire that that might be one of the reasons
15 that there has been a lack of fires, like a Browns Ferry?

16 MR. GUNTER: Certainly, I think that it's
17 clear that because of the risk and consequence of fires
18 it is a chief concern in the industry and should be for the
19 regulator as well.

20 So I do understand that and I've toured power plants
21 as well to the extent to see the introduction of
22 combustibles, for example, is attended to in great

1 detail.

2 But nevertheless as I said history has demonstrated
3 that these plants are vulnerable and it's the curse of
4 course that we're worried about because the
5 consequences could be unacceptable.

6 COMMISSIONER KLEIN: Thank you. No further questions.

7 CHAIRMAN JACZKO: Thank you. Commissioner
8 Svinicki.

9 COMMISSIONER SVINICKI: Thank you. Thank you for your
10 presentations. Mr. Donahue, I'm going to return to a topic that you raised that
11 I've given much thought to.

12 There's plenty to think about right now in terms of
13 the pilots but you were kind of looking over your
14 horizon, which I appreciate. You said something along these lines,
15 after driving through the review of the LAR a next area to focus on would be the
16 inspection process and you talked a little bit about that. You talked about
17 minimizing subjectivity. Can you help me understand with a little greater
18 specificity? Why is it that at post transition to NFPA 805 it would be more
19 challenging for an inspector, is it just simply because a deterministic approach
20 is I have a set of very prescriptive things that I inspect to
21 versus the more nuanced understanding that's
22 necessary under the risk informed PRA process is

1 that kind of the kernel of the issue there?

2 MR. DONAHUE: Yes that's the kernel if you think of one in the
3 deterministic being very rule based, and in the case of the fire PRA when you
4 get into 6850 you are going to get into what assumptions were made for
5 the fire propagation, what assumptions were made for that particular cabinet,
6 that particular raceway and then you can get into
7 discussions of interpretations of a very prescriptive document 6850 how
8 was that applied in the computer modeling. So it adds a
9 different level of subjectivity.

10 Then also part of the 805 process is the engineering
11 evaluation change process which allows us going
12 forward in the future to make changes to the plant,
13 use the risk models and say that this particular
14 change we made, meets a threshold
15 that we can go ahead and move forward
16 and make the change without NRC approval.

17 That could come under scrutiny several years later
18 on a tri-annual when they come back in and said we
19 believe you should not have made that change and we
20 don't believe in the basis. So it adds a little bit of subjectivity
21 that we have to work through and to be able to have some certainty as to
22 how that works and we have to get in some real-life examples of

1 changes because I can think of quite a few changes which
2 absolutely don't have any impact. It's going to be can you find
3 some of those in the real-life world that are on that
4 right at the threshold and how do we communicate
5 those rather than wait three years.

6 COMMISSIONER SVINICKI: And then hearing
7 that, Mr. Gunter would you say that looking at that
8 same issue from a slightly different angle, that the
9 scrutability of this in all of these determinations and
10 interpretation that needs to be done when we've
11 moved away from the deterministic approach that it
12 may make it more challenging for public transparency
13 in the scrutability of looking into that
14 implementation and inspection process, is that
15 accurate or something that you think from the
16 public's perspective of kind of understanding this
17 transition away from Appendix R prescriptive
18 requirements, is that at least one aspect of the
19 challenge for the public?

20 MR. GUNTER: It certainly is, but I would also raise that issue
21 for inspectors of the agency itself.

22 There is this concern that were adding a new wing to

1 the labyrinth here.

2 COMMISSIONER SVINICKI: Thank you at least
3 two of you, I think, refer to the frequently asked
4 question process and it is not unusual for the staff
5 to use that when working through a development process on
6 construction inspection. I know that we have a very
7 fulsome FAQ process but it came up here and it sounded
8 like it's been a little bit challenging but also a
9 way maybe to expose issues and then move forward to
10 give, I think Mr. Donohue, you mentioned you've got
11 to get some sense of understanding of what the
12 staff's interpretation or maybe it was Mr. Pace, you said
13 acceptable interpretations from the staff is there
14 anything again since a couple of you mentioned the
15 frequently asked questions process.

16 How is that benefited in NFPA 805 and is there
17 anything about it that's been challenging or do you
18 say it's kind of the use of the FAQ is an absolute
19 good or has it been challenging here at all?

20 MR. DONAHUE: I'll start again, and again it
21 picks up with what my colleague Ken mentioned.

22 Being the lead plant many of the FAQs in the aid are a direct offshoot of

1 the particular circumstances we have Harris and Ocone,
2 so we were able to ask very specific questions of some of the FAQs say around.
3 the fire initiation and cabinets, which are very particular around our case.

4 Some of that could be research-based, some FAQs are
5 more interpretation of words written down in draft
6 or regulation or the NEI document, those we more or
7 less worked through, some are around, there's a particular
8 number in 6850 that was created as Mr. Canavan
9 mentioned then how does it apply to this particular
10 case.

11 I think we're a little bit slow as a overall body of
12 the staff working with the industry and addressing
13 some of those ones which may have been a little bit
14 more research-based or number based or realistic
15 based.

16 COMMISSIONER SVINICKI: Is it also true
17 that for the follow on transition plants, the FAQs
18 may or may not be a very good relevance to their
19 circumstance?

20 Were they truly tailored to the pilots?

21 MR. PACE: That's my understanding, but Mr. Canavan
22 has a much more crisp view of the FAQ process

1 MR. CANAVAN: I think that I can offer two perspectives.
2 One is that the FAQs that I am familiar with from web sites and other locations
3 are traditionally answered in a paragraph or two not 16 or 25 or 50 page
4 dissertation or report that contains additional research, interpretations --

5 COMMISSIONER SVINICKI: Is that what is happening here?

6 MR. CANAVAN: The Frequently Asked Questions range from a
7 paragraph response on a single interpretation, where it would appear that an
8 FAQ is very appropriate all the way to the point
9 where they are indeed research activities
10 that in my opinion don't belong in a FAQ process.

11 And as for culpability, you'll find
12 that probably 80% or maybe higher are applicable to
13 all the plants as we move forward especially to the
14 smaller interpretation ones, but the 10% or 20% that are
15 not applicable are usually the lengthier
16 dissertations on them.

17 COMMISSIONER SVINICKI: Again I'd know it's
18 a little bit of a side but I'm always curious if
19 we're looking at the best ways to communicate as a
20 agency and FAQs is something that I've been hearing
21 about lately so I just wanted to pull that thread a
22 little bit.

1 Mr. Pace, it's interesting because on your slide
2 three you talked about your decision framework for
3 transitioning to NFPA 805, I took from that you list
4 four factors but something that appeared to be
5 important was the risk informed enhancements to
6 safety and a standard approach across your fleet.
7 If we get to a point where some who have indicated
8 their intent to transition might be looking at that
9 and I guess I am now getting you to your slide 11
10 where you talk about some of the original
11 assumptions might have – what you assumed there might not be
12 valid, and not just speaking for yourself but maybe
13 for the larger wave of folks who might transition to
14 NFPA 805, they may relook at their intent to do
15 that. You made a statement and I'll paraphrase
16 although I tried to write it down, "It may have been
17 better to put 15 to 18 million into solving some of
18 the analysis questions and then making the mods to
19 comply", you also talked about or maybe it was
20 Mr. Canavan that a number of applicants -- there will
21 be use of fire PRAs whether or not folks are
22 transitioning to NFPA 805 so I guess from where we sit now

1 and the pilots aren't done, if a number of folks
2 are relooking or do end up looking at their
3 intention to transition but yet they do a fire PRA and
4 fire modeling and they make modifications I guess
5 I'm not sure in terms of kind of the overall
6 enhancement to fire safety or consistency of
7 approach, what's the difference for an individual applicant?
8 Would you make different physical modifications if
9 you are transitioning to NFPA 805 versus just doing
10 a fire PRA in making some physical mods and how
11 would they differ?

12 MR. PACE: Well, we'll never know maybe, going back on some of
13 these plants --

14 COMMISSIONER SVINICKI: That's way I'm asking you to speculate.

15 MR. PACE: One might say that on a later model BWR, like I am familiar
16 with, we may do the circuit evaluations that are now out in the NEI documents
17 and the NRC research documents that say here are the rules of
18 engagement for circuit analysis, which also has to be
19 applied to the PRA modeling by the way, and say I can
20 solve these four circuit issues by completely
21 re-routing these circuits out of the building even.
22 That may cost me \$2 million.

1 And now I'm in full compliance with the Appendix R under
2 the deterministic rules of engagement and I don't
3 have too, I haven't spent the other 17 on fire
4 modeling.

5 COMMISSIONER SVINICKI: Okay, Okay.

6 MR. PACE: Some licensees are committing and
7 building fire models but not engaging in the fire
8 modeling dialogue that's going on with the 805
9 transition. They are building fire models more along the
10 lines that the power models were built. Once again
11 Mr. Canavan can probably tell you some of the nuances and
12 differences in those techniques and approaches.

13 COMMISSIONER SVINICKI: You're reminding me
14 in the response to Dr. Klein's question that you did
15 indicate a lot of your investment had gone in the
16 recycling and the iterating on some of the modeling
17 and analysis so it's sounding like, although I agree
18 with you we'll never know and I'm asking a strange
19 question here, but it may be that under that
20 framework of not transitioning to NFPA 805 an applicant would have
21 less investment, or licensee would have less investment, in the
22 analysis and the modeling and maybe more in mods to

1 meet the deterministic requirements. That's what might look different about it. .

2 I would say that you said one of the benefits for
3 you was a fleet wide approach and I would say it
4 would seem like you'd lose that particularly if you
5 transitioned part of a fleet and not the rest of
6 it.

7 MR. PACE: We may very well, hypothetical, we
8 very well complete the Beaver Valley modeling exercise
9 including NRC reviews and have invested \$20 million
10 in a very sophisticated fire PRA model and eliminate
11 the proponents of the manual actions and evaluate
12 all the circuits and no modifications be required.
13 Success, right?

14 I haven't modified the plant so have I fundamentally
15 changed the plant's ability to respond to a fire
16 event?

17 No.

18 What I have done is vindicated those that argued
19 that it was safe under the previous rules of
20 engagement by absolutely proving that through
21 analytical methods using agreed-upon rules of
22 engagement that these were not realistic scenarios

1 in the beginning.

2 Does that make sense?

3 COMMISSIONER SVINICKI: Yes, again you are
4 indulging me. I'm peering a little bit into hypothetical decision frameworks for
5 various folks that might again take the whatever
6 comes out the pilot and relook at whatever they had
7 planed before.

8 MR. PACE: I'm familiar with this I've done
9 this exercise. So the deterministic approach would be
10 I don't agree with you that the circuit would get
11 involved in flames in this room, I don't believe
12 that there's a fire credible there and even if it
13 was it wouldn't propagate to the cable on this side
14 of the room. But under the old rules I assume the
15 room burns up and I will just move the cable,
16 right?

17 You win.

18 I'll move the cable and I'll spend the money on the mod
19 necessary to move the cable and I don't have to
20 argue about whether it's probable that it will be consumed in
21 fire or not.

22 That's kind of the point I was making.

1 So, the ones not committing to convert are
2 obviously believing they can take that approach and
3 I believe there are some plants, to Commissioner's
4 Klein question, that are much more capable of taking
5 that approach than others.

6 A late model boiling water reactor, which I'm familiar with could likely
7 take that approach for very little money.

8 COMMISSIONER SVINICKI: Thank you. Thank you Mr. Chairman.

9 CHAIRMAN JACZKO: I think there's a very
10 good discussion on perhaps provide a bit of context
11 for discussion before I ask questions.
12 I think it's important to remember I think -- I
13 don't have the 29 experience, I have four years of
14 experience -- in dealing with these issues and we do
15 seem to have a challenge with resolving issues.
16 If I would walk away, I would walk away thinking
17 that it's been extremely trivial to resolve the deterministic
18 challenges that really motivated NFPA 805.
19 I don't think that's the case, if that were the case
20 we should've been done and we shouldn't have to
21 worry about where we are.

22 We have the operator manual actions which were never

1 approved, never authorized, that have existed for a
2 long time and perhaps Mr. Gunter you would say
3 that's an enforcement challenge.

4 I may not disagree with that but that's a little bit of
5 the background so the approach that was taken was
6 for the industry to develop a performance-based risk
7 informed standard in NFPA, that stands for the National Fire Protection
8 Association. That was an industry developed standard, an
9 industry developed approach.

10 Then the NRC then when it adopted that and on a
11 voluntary basis allowing the industry to decide and
12 choose whether or not that was the path that they wanted
13 to follow.

14 Following that, ultimately the PRA standards came out
15 and an ANS/ASME/joint industry standard was developed for the PRA quality.
16 EPRI working with NRC developed 6850.

17 The bulk of the work and the bulk of the concerns of
18 what I'm hearing about is in the PRA work in the fire modeling by and
19 large most of which is developed and worked through
20 by the industry.

21 So the frustration that I have and perhaps the staff
22 has and maybe we'll hear about it, is that we have

1 now concerns and complaints about those issues which are fair
2 and that's not to say that is not the situation we want to be in, Mr. Pace as you
3 indicated we wanted to be done with this a lot sooner. I want to be done
4 a lot sooner. I'm sure Mr. Gunter would prefer that it were done a lot sooner, or
5 perhaps not at all. I should let you all speak for yourselves. But I think the point
6 is the challenges that exist in PRA, the new ANS/ASME standard requires
7 fire PRA as an initiating event. That is something that if the industry wants use
8 PRA models it's going to have to incorporate and
9 include.

10 So some of these challenges are challenges we are going to have
11 to address one way or another.

12 NFPA 805 has helped us because it has brought these
13 issues to the forefront and allowed us to address
14 them and allowed us to make what I think actually is
15 progress.

16 I do fundamentally believe that this is the right
17 route because it makes the plant safer and I think
18 we haven't necessarily talked about that but I think
19 Mr. Pace you hinted at that.

20 It gives us a better understanding of we right now
21 don't have as good of a tool to say if a fire
22 barrier comes in and as we've learned with Hemyc in

1 some cases in some applications it cannot meet that one
2 hour rating. We don't have a good analytical method
3 right now to grant an exemption for that.

4 We do it as you said Mr. Pace we look at it
5 we say think that there are metal combustibles in
6 the room so we think that it may be acceptable to do
7 that.

8 That's not, I think the best basis, I think the
9 analytical tools within NFPA 805 give us the
10 ability to say that this is a better, much better basis.

11 That having been said I think it's a little bit -- I
12 think these are very good points and it's
13 important to understand where we are in the
14 challenges we have to moving forward and I think
15 it's important to understand that the other
16 path was not as simple perhaps for many of these plants, and
17 so unfortunately we find ourselves in a difficult
18 situation and trying to work through what is
19 ultimately an important safety issue but also a
20 difficult one to resolve.

21 Having said that I thought I would explore a little
22 but the issues that we're dealing with in the

1 uncertainties in the modeling and perhaps trying to
2 better characterize where the models are. I think a
3 big philosophy that the NRC has incorporated with
4 its use of PRA models is that they need to be sophisticated
5 enough, and sufficient fidelity for the application at hand.
6 Would you say right now that the models don't meet
7 that threshold and that standard that the
8 uncertainties are large to the point that they don't
9 allow use of the models in this particular
10 application or anyone who wanted to comment on this
11 point.

12 MR. CANAVAN: I don't think it's so much
13 the uncertainties.

14 You brought up a lot of different questions. I
15 guess I think that our challenge is right now we
16 know the uncertainties are bounded, if you were to ask
17 me, or significantly bounded.

18 CHAIRMAN JACZKO: So we don't have a concern
19 that there is under conservatism in the modeling, it a concern that there is too
20 much of a conservatism.

21 MR. CANAVAN: That is the natural
22 progression of the process so when the 6850 and EPRI authors

1 developed the methodology when they hit a tough
2 issue, one that was difficult to get data or
3 difficult to analyze, the natural tendency of those
4 developers was to say let's use this number because
5 it bounds everything and when the pilots are done
6 we'll refine that number and we'll do that analysis.
7 And that's where we are now. We're at the tough spots
8 of doing that analysis.

9 CHAIRMAN JACZKO: So you wouldn't say that there's anything – I
10 wouldn't want people to walk away and think, and Mr. Gunther perhaps you
11 would want to comment on this too, that the models wouldn't provide for
12 adequate safety in this case.

13 MR. CANAVAN: The current set of models generally over predict when
14 compared to experience. So if we do a model of a turbine building, for
15 example, we do a very detailed model of the turbine building. We will find that
16 the numbers produced are something on the order of several turbine building
17 fires per year when we do the math of multiplying the number of plants. So
18 simple math tells us our models over predict, which was a great first start. Now
19 we need to refine those models to have them comport with experience because
20 in order to have trust in the model to use it for decision making we should at
21 least be able to reflect our previous experience at the appropriate
22 levels.

1 So this is not to preclude a large fire from occurring or propagating its way
2 through the model but it's to say that for the smaller events they're accurately
3 reflected in a reasonable range of their occurrence and experience.

4 CHAIRMAN JACZKO: But right now its not
5 under conservative in any way --

6 MR. CANAVAN -- not in any area that I'm
7 aware of.

8 MR. DONAHUE: Let me talk a little bit
9 about Harris if I might and I absolutely agree with
10 you.

11 If I take a look at the areas that are in PRA
12 model when we go to a level of monitoring every
13 single -- the majority of the cables -- and that's how we
14 got to 4000 scenarios, those scenarios did bring
15 focus on three or four areas that my gut as an
16 operator and a licensed operator would say those are
17 interesting areas so they called those out.

18 How we deal with those -- the one area that seemed a
19 tad over conservative for us was the propagation of
20 fires in low-voltage I&C cabinets which are adjacent say
21 to our control room which our operators are right
22 there.

1 Really where the discussion gets into is how much
2 credit, how fast can an operator open the door and go
3 see if there's a fire.

4 So we're really around how quick mitigation strategy
5 and does the fire happen that the cabinet just
6 burns up in a minute or is it going to get other
7 indications that you can put an operator in there to
8 get it. So it's really around some of the mitigation
9 strategies and really around, I'll call in our case,
10 cabinets.

11 The other areas, they were of interesting areas, we are
12 addressing those areas directly. What happens is in
13 the order of magnitude in CVF risk which may not,
14 there's where can't add fire plus internals
15 directly.

16 The numbers are both acceptable but I truly believe
17 the internal events number with the years behind it
18 is a very valid number and I think we're
19 over predicting it to add in fire, so when you add them up
20 if you think of these as hazard groups which is
21 really the way the code does, you're almost giving
22 too much credit for the hazard group of fire

1 compared to other hazards.

2 I think the maturity will come there as we address
3 some of these issues and we've addressed them by our
4 modification strategies that we have done at our
5 particular plant but they are not under estimating
6 based on the knowledge, nothing overly surprised me.

7 CHAIRMAN JACZKO: That's good to hear and I
8 guess I would take your comment to mean giving a
9 choice having to make a modification that would
10 effect an internal event, flooding hazard perhaps, or something like that
11 versus a fire event, the models right now wouldn't
12 necessarily tell you which one is where you would
13 spend your dollars.

14 But within the fire realm it gives you a relative
15 ranking among the cabinets versus the fire wrap
16 somewhere or something like that.

17 Mr. GUNTER: Obviously, thank you, one of
18 the concerns that we have is, how do you model
19 accurately reliable human behavior?

20 And that seems to be certainly one area of
21 uncertainty that I don't think you can
22 underestimate, how people can just simply by error

1 or by ignorance influence a consequence. I mean I
2 would just challenge that I think that it's a
3 mistake to think that we're -- that these models can
4 be overly conservative when you begin to introduce
5 things like human behavior into it.

6 CHAIRMAN JACZKO: I have a person on my staff who
7 had some experience in the area of human
8 reliability and the work that's done in the models.
9 It's certainly a very fair point.

10 I don't know if any of the -- Mr. Canavan -- want to
11 comment on that or anyone on how those issues are
12 incorporated into the PRA models and how that aspect
13 is addressed.

14 MR. CANAVAN: I don't think I disagree that
15 it's a source of uncertainty.

16 I think I would disagree that you can't be over
17 conservative in characterizing that performance.
18 The fire scenarios are trained on, they're
19 rehearsed, they're practiced, there is reasonable
20 assurance that they can actually be performed, that there
21 were walkthroughs, it's proceduralized.

22 This is not just someone deciding one day this is

1 how they are going to react.

2 These are actions that are practiced, trained,
3 proceduralized. A note of caution about
4 conservatism is your ability -- if you're conservative
5 in one part of the model your ability to rank within
6 the hazard group or your
7 ability to say that these are my fire issues
8 one through ten can be limited. As a matter of
9 fact one of the outcomes of non-PRA pilots that
10 they're finding out now is that the staff at the
11 plants intuitively know the fire areas that are of
12 concern because they walk and they see all the cables.
13 They say this is the place that we are concerned
14 about.

15 Then they go off and do a Fire PRA in accordance
16 with the rule set that they currently have and that
17 areas ranked number five.

18 So there's immediate -- this PRA can't be accurate.
19 What we need to do is if that area is suppose to be
20 number one and its number five because we haven't
21 appropriately credited things or we haven't modeled
22 them correctly, we need to fix the model.

1 CHAIRMAN JACZKO: I appreciate that and I
2 think this has been a very good discussion and I
3 appreciate you all coming in and sharing your
4 experiences. What we want to have is a
5 process that works and in the end we'll hear from
6 the staff and I'm sure they have some insight to
7 share on their take and how we're going to come to
8 resolution on these issues and this meeting has
9 focused on the NFPA 805 but I think as I said at
10 the outset we are providing alternatives and
11 solution paths in some of these other areas but my
12 experience in the fire area has been that new issues
13 crop up all the time and I think the NFPA 805
14 provides a framework to deal with those new issues
15 in a way that one off approach doesn't necessarily
16 satisfy in the deterministic areas. I think
17 that's one of the added benefits as we go
18 forward.

19 I appreciate your being here and would continue to, those who are
20 transitioning, encourage you to continue to transition and those that are
21 thinking about it, encourage you to continue to do that and continue to share
22 your experiences so we can make the process better.

1 Thank you.

2

3 CHAIRMAN JACZKO: I think we had very good
4 input and insight from our stakeholders. Bill I
5 will turn it over to you to start the staff
6 presentation.

7 MR. BORCHARDT: Thank you, Chairman, good morning.
8 The fire at Brown's Ferry over thirty years ago
9 was a pivotal event.

10 We heard about it earlier in the presentation this
11 morning. It brought about some fundamental changes to
12 the way the NRC regulated and the industry worked to
13 address the fire issues.

14 In 1980, the NRC issued Appendix R that back-fit
15 certain requirements. Then in addition the rule
16 provided an exemption process that allowed licensees
17 to seek alternatives to meeting the regulations.
18 That set the stage for creating a wide range of
19 approaches and licensing bases throughout the fleet.
20 As a result of those numerous guidelines, back-fit
21 of regulations and the varying dates of plant
22 operation, each plant licensing basis is unique with

1 multiple supporting documents and this can make all
2 of our jobs more challenging.

3 In the 1980's, NFPA initiated work to develop the
4 national consensus for performance-based fire
5 regulation and in 2004 the NRC issued the
6 regulations which was an alternative approach to
7 Appendix R.

8 Addressing fire protection has been a long,
9 difficult, and resource intensive activity for both
10 the industry and the NRC.

11 Progress has been made though to improve fire
12 protection and to enhance knowledge about fire
13 hazards.

14 While there's certainly more work to be done we
15 shouldn't lose sight of the fact that we are in a
16 far better place today than we were 25 years ago.

17 Slide two, please.

18 This is the agenda and the presenters for this
19 morning's briefing by the staff and I'll turn the
20 meeting over to Jack.

21 MR. GROBE: Thank you, Bill.

22 The majority of our presentation today will be on

1 the progress we have made and the lessons we've
2 learned in the transition to NFPA 805 the risk
3 informed performance based fire protection requirements.
4 I'll start the presentation with a brief summary of the
5 progress we've made in implementing our closure
6 plans stabilizing the regulatory infrastructure.

7 Next Alex Cline on my right.

8 Alex is the Chief of the Fire Protection branch, NRR
9 and Donnie Harrison on Bill's left.

10 Donnie is the chief of the PRA licensing branch,
11 NRR.

12 They will present our experiences with the
13 transition to NFPA 805 and then Mark Salley on the
14 far left will summarize.

15 Mark's the Fire Research Branch Chief in the office
16 of Nuclear Regulatory Research.

17 He'll give you some insights on our focus area for
18 fire research.

19 Next slide, please.

20 In November 2008 the staff prepared a fire
21 protection closure plan.

22 That plan included eight tasks intended to stabilize

1 the regulatory infrastructure for fire protection.
2 Just this week we forwarded to the Commission our
3 second semi annual progress report, three of those
4 eight tasks concerning electrical raceway fire protection barriers, regulatory
5 effectiveness assessments and past fire protection identification resolution have
6 been resolved to date. Substantial progress has been made on the remaining
7 five tasks.

8 Regarding those facilities not transitioning to NFPA
9 805, the last remaining instability in the
10 infrastructure was resolved on Monday this week.

11 The two most challenging issues for those plants has
12 been operator manual actions and multiple cable
13 faults resulting in spurious operation of equipment.

14 The regulatory guidance in both of those areas has
15 been clarified in collaboration with industry.

16 Enforcement discretion has told on operator manual
17 actions and the industry has addressed those issues.

18 Enforcement discretion on circuits allow six months
19 from Monday to identify noncompliances, to utilize
20 the guidance in identifying noncompliance situations
21 and then 30 months to resolve those.

22 At this point I'd like to turn it over to Alex Klein

1 who will begin our discussion on at NFPA 805

2 transition issues.

3 MR. KLEIN: Thank you, Jack.

4 Slide four, please.

5 What I'd like to do is give you an overview of the
6 NFPA 805 activities.

7 I'd like to start off with where we are with the
8 infrastructure development for transitioning to NFPA
9 805.

10 You've heard a lot of the history in terms of when
11 the rule was issued back in 2004.

12 A year later, issued a Regulatory Guide 1.205 Rev 0
13 back in 2005.

14 Around that same time frame we also received
15 interest from a number of licensees to
16 transition to NFPA 805 and that occurred later on
17 in 2005 and that's how we obtained the two pilot
18 plant Oconee and Harris.

19 The NFPA 805, I think you heard that also, the standard itself, and I want to
20 stress that, is a national consensus standard and I
21 think that there were some talk previous about the
22 fact that the industry was involved and I wanted to

1 stress the fact that this was a national consensus
2 standard developed by the NFPA at the request of the
3 staff back in the 1990s timeframe.

4 There's been a long history in terms of developing the
5 standard and understanding what's in NFPA 805.

6 At the same time the staff continued its public
7 collaboration process through the pilot plant process from 2005
8 onward to refine and make adjustments to the Regulatory Guide 1.205.
9 We've done that.

10 There's draft Revision 1 that the staff has worked
11 on. It's a draft that we will be going to ACRS with
12 within the next two weeks or so.

13 The ACRS subcommittee we hope to have the revision
14 to Reg Guide 1.205 issued in January 2010.

15 Along with that the staff has also worked to put
16 together a new Standard Review Plan for NFPA 805
17 plants.

18 We worked that in parallel with the revision to
19 Reg Guide 1.205.

20 We've done that in the open collaborative process.
21 We've issued the SRP for public comment earlier this
22 year. We've received comments and incorporated those

1 comments so that the publication date for the SRP is
2 in parallel with the revision to Reg Guide 1.205.

3 The staff is also working on a safety evaluation
4 template and that is an effort to put together a
5 document such that we would be consistent and
6 effective in our license amendment request reviews.
7 from the licensees, and of course we're informing
8 ourselves through the pilot plant process when we
9 developed this.

10 We aim to get this done sometime the second quarter
11 of calendar year 2010.

12 You heard some talk about inspections also.
13 The staff has been preparing for inspections. As a
14 matter of fact we have a final draft of a post if
15 you will, NFPA 805 plant that the staff has worked
16 on with the Regions.

17 We've incorporated all the Regional comments.
18 We've incorporated the lessons learned from the
19 pilot plants.

20 Currently the staff's plans are we're evaluating how we
21 can pilot this inspection, you mentioned that one of
22 the pilot plants indicating an interest so we're

1 continuing the dialogue with that pilot plant to
2 implement the pilot inspection plan and of course
3 once we've done the pilot inspection plan we will
4 revise the inspection procedure accordingly.

5 Next slide please.

6 With respect to the actual pilot plant license
7 amendment request, we received the two pilot plant
8 license amendment requests in May of 2008.

9 We were informed back then that the license
10 amendment requests were incomplete.

11 We recognize that it was part of the pilot plant
12 process. This license amendment request, it's a first
13 of a kind, integrated approach with using the
14 risk informed, performance based methodology. The staff
15 has continued to work with these two pilot plants to
16 develop their license amendment request in an open
17 and transparent way.

18 We've performed on-site regulatory audits at each of
19 the two pilot plants this year.

20 The Harris plant has completely revised their
21 license amendment request. The staff received the
22 application from the pilot plant about two weeks ago.

1 We expect the same type of submittal from Oconee near
2 the end of January 2010.

3 The staff is currently writing safety evaluation
4 report sections for the Harris SER and we expect to
5 issue the Harris SE in the first quarter of 2010 and
6 the Oconee SE in the second quarter of 2010.

7 Next slide, please.

8 With respect to some of the lessons learned with
9 NFPA 805, you heard some of the other prior speakers
10 talk about plant modifications, what I want to I
11 guess mention to you is that when licensees transition
12 to NFPA 805 they reanalyze their fire protection
13 programs.

14 They trace their cables, they look at their
15 procedures, they do a number of activities but,
16 however, it's not just a paper exercise is not just
17 an analytical method that licensees go through. Our
18 experience with the two pilots indicates that the
19 two pilot plants have a better understanding of
20 their risk especially the fire risk in their plants.
21 As a result of that they're making what we believe
22 are substantive safety enhancements in their plants.

1 They're not just making procedural changes they're
2 actually making hardware modifications in their plant,
3 and I think you heard some examples from one
4 of the pilot earlier this morning.

5 The other item I want to mention to you and I label
6 it communication, but I want to stress to you what
7 we believe is a success of the frequently asked
8 question process.

9 We implemented that process several years ago when
10 the pilots were first going through their transition
11 to NFPA 805.

12 We've addressed technical and regulatory issues
13 throughout this process, we've done it in a very
14 open and collaborative way.

15 We hold monthly public meetings to discuss these
16 frequently asked questions. Just to give you a flavor
17 we've had somewhere in the order of 47 frequently
18 asked questions and right now there are six that are
19 still open.

20 We've closed the rest.

21 You've heard some of the issues associated with
22 NUREG CR 6850.

1 The staff recognized that some of the issues
2 associated with that, the technical issues that were
3 identified by the pilots and the non- pilot plants,
4 were not achieving timely resolution so we
5 implemented a modified frequently asked question
6 process for the 6850 related technical issues
7 earlier this year.

8 As of this point right now we have closed out all of
9 the identified 6850 related facts that have been
10 identified by the industry.

11 There's some follow on paperwork that's still
12 necessary through the issuance of closure memos but
13 the staff is on a path to closure for those.

14 With respect to planning, what I want to say about
15 that is when licensees transition to NFPA 805
16 you hear a lot about fire protection that seems to
17 be the operative word but I think as one speaker
18 indicated and rightly so identified that the
19 resources and expertise needed to transition to NFPA
20 805 is not just limited to classical fire
21 protection. There are many other disciplines
22 involved, for example, fire modeling expertise is

1 necessary, post- fire safe shutdown expertise,
2 circuit analysis expertise and not to forget
3 expertise in probabilistic risk assessment is
4 necessary.

5 So an integrated team approach is necessary
6 certainly to transition to NFPA 805.

7 It's not simply a one discipline approach.

8 The team approach is not only on the licensee
9 side, it's also on the staff side.

10 Next slide, please.

11

12 With respect to the non- pilot plants coming in for
13 the license amendment request as I indicated to you
14 we've had many public interactions and I think
15 something on the order of 50 or more public meetings
16 have been held with the industry over the last
17 several years while the pilots transitioned.

18 I think that the non- pilots have had an
19 opportunity to learn and understand the issues that
20 the non- pilots have been facing and the challenges
21 so we've continued this open and collaborative
22 process.

1 We believe that the issues are well known that our
2 guidance at this point is well-known.

3 That our guidance is stable, and that licensees can
4 move forward to NFPA 805.

5 We believe that some licensees may submit license
6 amendment requests in the early to mid 2010 calendar
7 year time frame with the majority of the license
8 amendment requests expected in the later part of
9 2010 in the fall.

10 I now hand it over to my colleague, Donnie Harrison.

11 MR. HARRISON: Thank you Alex.

12 Slide eight: I just want to start by saying that we
13 have established the infrastructure for being able
14 to perform quality PRAs, fire PRAs that support
15 decision-making not just for NFPA 805 but for other
16 risk informed applications; that's an important
17 point.

18 We've done this through an open, collaborative
19 environment. We've had numerous public meetings.
20 We've gone through the various guidance to develop
21 that and create an infrastructure that's also stable
22 so the industry knows what to expect and how to

1 perform the analysis.

2 That being said we also recognize that NFPA 805
3 applications are the first time some of this
4 guidance has been implemented and therefore you are going
5 learn things.

6 We're feeding those lessons back into revising the
7 guidance, refining the methods and moving forward
8 with again stable guidance for the industry to use.

9 Next slide.

10 As Alex mentioned there is this frequently asked
11 question process that we follow to address issues
12 that were raised during the NFPA 805 implementation
13 modeling as issues came up.

14 At this time of the dozen or so fire PRA related
15 6850 related FAQs, all of them have been resolved.
16 We have no new issues that have been implemented
17 that are submitted to the process for us to address
18 and again we're just finishing out the paperwork on
19 the last couple of items.

20 From my perspective that process has worked well to
21 come to a staff position on these issues, so that it
22 enables the industry to move forward.

1 At the same time, we also recognize that there are
2 some issues, some fire modeling issues that if you
3 want to refine the model you need to do additional
4 research and to support that, Mark Salley is going
5 to talk about more about that in a minute. Again
6 the issue there is if you want to refine the PRA you
7 need to have the technical basis to make those
8 refinements and that's where in some areas we need
9 additional research to collect the data and do the
10 analysis. With that I'll turn it over to Mark to
11 talk about the research.

12 MR. SALLEY: Thank you Donny, Chairman,
13 Commissioners.

14 I would like to talk about the Office of Research
15 and the part where we are supporting NRR here. Firstly is how do we do this
16 work. We work off of user need requests.
17 This is where we meet with our colleagues in NRR and
18 they give us their priorities and the things they
19 would like us to do the research on.
20 So that kind of sets our precedence as to how we'll
21 work the research.

22 The second thing is we like to work in a

1 collaborative nature, we don't like to go it alone. So
2 where possible we'll look for partners. One you have
3 heard from EPRI this morning where they have similar
4 interests that are of a technical nature where we can
5 pool our resources, we'll work with EPRI and put out
6 joint reports.

7 We do a number of that.

8 Second thing is other experts in the government.

9 In the 1960's and 70's there was a fire problem in
10 America that brought a Presidential look at it and
11 the Report "America Burning" came from that. In 1975, the same year we were
12 established, they established a Center for Fire Research out at NIST.

13 So are very tight working with NIST on their fire modeling.

14 They have almost 35 years of fire modeling
15 experience that they help us do our jobs with.

16 We also have a very strong national laboratory
17 program.

18 Chairman, you and Commissioner Svinicki have both
19 been to Sandia. You have seen the work that we have done and how we are
20 doing our cable functionality testing out at Sandia. Next slide, please.

21 Briefly I'd like to just touch on the key areas that
22 we're working in Research right now.

1 I've heard the term modeling thrown around a lot and
2 its got me confused whether we were talking about
3 fire modeling or PRA modeling, or human reliability, so I want to try to
4 keep it a little tighter into the bounds.

5 Fire modeling is not unique to NFPA 805
6 we've been at this for quite a while if you think
7 back into the 1990's when we decided to use the risk
8 information and the STP process was developed we had
9 a change there where we had to teach our inspectors
10 on how to understand fire dynamics if they're going
11 to use the significant determination process. When
12 they had have a finding one of the first things they do is
13 postulate the fire so they need to understand some
14 of the basic fire dynamics.

15 We ran a three-year program, quarterly workshops
16 with our inspectors and we brought all those lessons
17 together and we issued NRC NUREG 1805 which is our
18 basic fundamentals of fire dynamics for our inspectors.
19 That was in 2004.

20 We continued on and we had a joint program with EPRI
21 to V&V fire models.

22 That came together as a report we looked at not one

1 but five different fire models.

2 We brought a lot of partners together, EPRI, NIST,
3 NRC and we did five fire models. We followed the national
4 standards, ASTM E, 1355.

5 We looked at 26 different experiments, 13 key
6 parameters.

7 Basically, it gives you the “War and Peace” of fire
8 model V&V and the fact that its seven volumes long
9 and it's quite in depth.

10 It addressed a lot of uncertainty.

11 It went through peer reviews.

12 It went through ACRS so it was quite a rigorous
13 piece of work.

14 We followed that up with an expert elicitation
15 where we brought fire modeling experts together and said
16 how good are we and where do we go in the future.
17 What experiments do we need to do and where do we need to
18 work with NIST to improve the fire models. We've completed that.

19 Currently today a joint team between EPRI and NRC
20 and NIST is putting together a fire models users
21 guide, if you will, a guide to help the plant people
22 and the consultants and our inspectors when they

1 look at the fire models to make sure that we've
2 adapted to the nuclear environment. That has just
3 finished the peer review.

4 The guys are finishing the comments up now and hopefully
5 by the end of the year that will be out for public
6 comment.

7 We have a routine where we do this. We use a
8 lot of peer review and we would like to go for a
9 good sixty day public comments so that we can get
10 everybody's concerns about our product.

11 That's where fire modeling is and with that I think we'll have a stable
12 base to work on and to go to the next level with
13 fire modeling which we're thinking about now.

14 The next form of modeling is the fire PRA.
15 You've heard a lot about 6850, it came about in the
16 year 2005 and again it was a joint project between
17 EPRI and the NRC.

18 The keys were here to get the methods, the tools and
19 the data needed to do a fire PRA.

20 At the time it was the state-of-the-art so in 2005 it
21 was a very good state-of-the-art document.

22 We're now in 2009.

1 We now have some experience in using it.
2 We conducted other research and other experiments
3 and the state-of-the-art is moving forward.
4 We're seeing that.

5 We're seeing that where 6850 is being refined.
6 We've looked at all the different elements of it and
7 the biggest question for me right now is when do
8 we do the revisions because the state of the art will
9 advance. We're seeing that.

10 That's why we're tracking that
11 right now and we expect to do a revision again
12 hopefully with EPRI as a joint document.

13 The third activity is experiments.
14 To get the numbers and the data a lot of times it
15 takes an experiment to answer one of the FAQs and
16 experiments don't happen overnight.

17 Chairman, you just saw some of the work we were
18 doing on cable flame spread and ignition.

19 That's a multiyear program that we're working with
20 NIST and yes, it will answer an FAQ and yes, it will
21 improve the understanding but it will take a little time
22 to do.

1 The cable functionality testing that's one that we
2 been with a few years and in 2001 NEI and EPRI
3 conducted a series of test and came up with a bunch
4 of numbers and different correlations of how the
5 cables would fail when exposed to fire. We
6 followed that in 2003 with a facilitated workshop.
7 We brought the best minds together and said what
8 have we learned about this and how can we predict
9 this cable response to fire.

10 From that some unanswered questions came, we
11 followed it up with a cable program. We went to
12 Sandia. In 2008 we completed that and we got the
13 answers to those questions so we have a pretty good
14 handle on the AC response, AC circuit response to fire.

15 As a byproduct we also developed the improved fire
16 modeling tool where we can do the one dimensional
17 heat transfer to get a better, more accurate
18 prediction to cable failure.

19 Finally, the third piece is going on right now and
20 that's been a change from an AC circuit to a DC
21 circuit, how does that affect it?

22 This testing will complete at the end of the year.

1 Earlier in the year we will come up with a report and then
2 we'll move into another facilitated workshop
3 approach to see how we've advanced.

4 The final thing is knowledge management, we've got
5 35 years of information of history we're starting to
6 collect that.

7 You've seen the Browns Ferry NUREG brochure this
8 year as well as one on fire research.

9 With that I will turn it back over to Jack.

10 MR. GROBE: Thanks Mark.

11 Just a brief summary. In the past several decades
12 there has been very significant improvements in fire
13 safety at nuclear power plants.

14 For the non-805 plants the staff has worked very closely
15 with the industry and our external stakeholders and
16 the regulatory infrastructure for those plants is
17 stable and predictable.

18 Those issues have been resolved.

19 We've collaborated closely with our external
20 stakeholders to stabilize the infrastructure for 805
21 transition. The pilots are nearly complete, we
22 believe that that's sufficiently stable to move

1 forward with 805.

2 As we move forward for any additional questions that
3 come up we have an effective process, the frequently
4 asked questions process and a robust relationship
5 that Mark just described with the industry to
6 resolve any necessary research issues that are
7 important to answering frequently asked questions.

8 As with most of our activities since we've
9 implemented the closure plan, we completed one
10 ahead of schedule.

11 That completes the staff presentation, we're ready
12 to answer any questions.

13 CHAIRMAN JACZKO: Thank you for sharing
14 your thoughts and insights we'll start with
15 Dr. Klein.

16 COMMISSIONER KLEIN: I think the staff
17 should be complimented on all of their progress on
18 the fire protection all the way to the research
19 that's always a fun part to do and to the results of
20 doing all the regulations and inspections. I guess,
21 Jack, just to start with you in terms of the
22 technical issues in regarding the deterministic

1 process, are there any technical issues that need to
2 be resolved for the deterministic approach?

3 Mr. GROBE: We're not currently aware of
4 any.

5 The final issue was the multiple cable faults
6 spurious operation issue. That resolution methodology
7 is well understood by both the staff and the
8 industry and has been piloted at one plant.
9 We're not aware of any technical issues with respect
10 to the deterministic approach.

11 Mark highlighted a very interesting issue with
12 respect to DC circuit failures.

13 We're staying very closely connected with what
14 research is learning in that area.

15 That might be something that precipitates some
16 further action in the deterministic area but as of
17 right now there is none that we're aware of.

18 COMMISSIONER KLEIN: Thanks.

19 Alex, you heard from the first panel, there is some
20 interest in the inspection program for the NFPA 805
21 and you talked about that you're working with a
22 plant, how are you communicating that to the

1 industry; is there good communication channels on
2 how do you intend to inspect; and then how do you
3 take lessons learned?

4 MR. KLEIN: As I indicated Commissioner,
5 the inspection procedure is draft final, right now,
6 we have not shared it yet, with the public, so
7 therefore the non- pilots are not aware.

8 We are evaluating what our plan should be what the
9 next step should be with respect to that inspection
10 procedure and piloting it with the pilot
11 plant. We certainly do intend to share it with the
12 public and with the non- pilots.

13 We will do the this entire process in a very open
14 and collaborative manner with the industry when the
15 staff has made the determination that we can release
16 the inspection procedure to the public.

17 COMMISSIONER KLEIN: Thanks.

18 Well I had visited Shearon Harris several months ago
19 and was very impressed with the thoroughness of what
20 the staff has done and the industry in regard to the
21 fire protection in their activities to NFPA 805.

22 Are you able to quantify the safety values that they

1 have achieved in terms of actions they've taken in
2 other words we always look in numbers, as a
3 regulator so when you look at all of the things that
4 they've done, are you able to quantify that?

5 MR. KLEIN: I'll ask Donnie to chime in,
6 in a minute because I'm more of a classical fire
7 protection engineer if you will and if I could
8 answer from that point of view.

9 From my understanding from the modifications that
10 the Harris plant has made, one of the ones that I
11 would bring forth that Mr. Donohue did not mention
12 was their work in the application of the
13 material called mega cable which provides a
14 three-hour fire barrier in their plant without using
15 any fire wrap material.

16 My understanding is that the Harris plant has
17 implemented this modification and put in hundreds of
18 feet of this material if not thousands and my
19 perspective is that when a licensee puts in hardware
20 modifications such as incipient fire detection to
21 me that is a benefit to plant fire safety. In terms
22 of quantification, Donnie could probably better

1 answer that question.

2 MR. HARRISON: I'll start by quoting the
3 Harris representative they said they had a 20%
4 reduction in their fire core damage frequency
5 so there's that quantitative amount, but the
6 one thing I would stress is that synergistic benefit
7 like the reactor coolant pump seal injection, the alternate seal injection
8 capability that they're adding. It's not just improving the fire risk it's improving
9 the overall plant risk and that is a big benefit. One last
10 thought would be, you can't quantify the benefit
11 associated with the enhanced knowledge. They've
12 learned a lot about their plant about where the risks are,
13 where there are areas that they need to focus attention on.
14 The one good thing with a fire PRA, it's an integrated
15 tool and it brings that clarity to focus even if
16 you're arguing that it's somewhat conservative it
17 still focuses in on those areas that are important
18 to look at and you can't devalue that knowledge.
19 It's an important aspect that were gaining through
20 NFPA 805.

21 COMMISSIONER KLEIN: Well this may be a
22 question either for Bill or for Jack there are I

1 believe over 50 plants that indicated that they wanted to
2 look at transitioning to NFPA 805, do you think
3 they'll all proceed down that path?

4 MR. BORCHARDT: I wouldn't hazard a guess
5 myself. I think that we are hearing varying degrees
6 of feedback from licensees.

7 They're still interested in the pilots ultimately
8 play out and I think there's a lot of individual
9 decisions to be made.

10 COMMISSSIONER KLEIN: Any staffing issues
11 related as we move forward?

12 MR. BORCHARDT: For NRC?

13 COMMISSIONER KLEIN: Yes.

14 MR. BORCHARDT: None that I know of.

15 MR. GROBE: No, none.

16 The Commission adopted budgets for 2010-2011 that
17 included additional resources.

18 One of the reasons that the staff generated the
19 Standard Review Plan and is generating a standardized
20 Safety Evaluation Report is anticipating significant
21 workload in the fall.

22 We're going to be effectively integrating contractor

1 resources along with our staff resources to get that
2 work done, so we're in good shape.

3 COMMISSIONER KLEIN: Are you going to stage
4 the applications that we've received and then the
5 review of those or how are you going to handle the workload?

6 MR. KLEIN: The SECY Paper that we had
7 submitted to the Commission about a year or so ago
8 Jack mentioned, the additional resources that were
9 given to the staff.

10 We did mention an approach where we would then take
11 a look at -- if we did receive 15 to 20 of these license
12 amendment requests all within a span of a week or so,
13 or what have you.

14 There is a process the staff would go through to
15 determine which ones we look at first and we used
16 examples such as where that licensee may stand with
17 respect to the quality of their submittal, where
18 they stand in line with respect of the next tri-annual
19 fire protection inspection and any other issues
20 that the staff may be aware of at that particular
21 licensee.

22 COMMISSIONER KLEIN: Thanks, well moving

1 onto the research aspect how much does the NRC
2 typically spend a year on fire research?

3 MR. SALLEY: That varies, right now we have
4 approximately ten FTE that are in the fire research branch.
5 We have ten individuals that are working all the aspects of the
6 fire modeling, the fire PRA, and the experiments.
7 The budget numbers vary depending on if we have
8 experiments or not.

9 We typically run in the 4 to 6 million. Obviously,
10 when we're doing a lot of experimental work that
11 costs a lot more money.

12 COMMISSIONER KLEIN: In terms of the
13 research activities, what would you list as number
14 one on what we need to do in research in the fire
15 protection area?

16 MR. SALLEY: They're all number one with
17 me, but the fire PRA seems to be the big challenge when
18 you look at the different communities the fire
19 modeling group tends to work pretty well together. There is a fire HRA group
20 that is also going, but the larger fire PRA is the one we need to focus in
21 on right now.

22 COMMISSIONER KLEIN: Great, thanks, no

1 further questions.

2 COMMISSIONER SVINICKI: Thank you I would
3 return to a topic I was looking at the transcript from last year's meeting
4 and I had heard about some training on the broad issue of the human capital
5 challenges in fire PRA and making sure that if there was going to be a
6 concentrated industry focus that they would have folks trained and if the
7 transcript is accurate I was informed that there was a course
8 jointly offered by NRC and EPRI and I think it was
9 for people that were already somewhat expert in PRA
10 and they could do a module on fire PRA. Do we still participate in that and
11 could any of you react on any of the human capital challenges. Have we
12 trained folks and made visible progress from last year's meeting.

13 MR. KLEIN: If I could respond first and
14 I'll ask Mark to please respond
15 In terms of staff training, the staff does
16 participate in this training. When we
17 receive new staff members into the branch we develop
18 a training plan with them and identify the
19 training needs for that individual based upon prior
20 knowledge and expertise of the individual and we do
21 send those individuals to the training that you
22 speak of Commissioner, with the, under the joint

1 effort with EPRI and Research and that's why I wanted
2 Mark to perhaps make some remarks about that effort.

3 MR. SALLEY: Along with EPRI when 6850 was
4 published we recognized that you couldn't just
5 publish it and walk away from it, the training
6 aspect needed to take place.

7 Under the same EPRI and NRC Research MOU twice a year we
8 hold the training.

9 We alternate the years, one year EPRI will take the lead,
10 the second year we will take it.

11 It's held for free because they're working with us
12 so it's kind of a public meeting type of atmosphere.

13 But the training is fairly involved, it's a full week
14 and there's three separate classes one on the PRA
15 HRA aspect, one on the fire and fire dynamics aspect
16 and the third thing is the electrical engineering, the
17 systems aspect.

18 We just finished up this past year, it was EPRI's
19 turn to host it, they did one in Palo Alto, second
20 one was done in Richmond.

21 Next year will be the NRC's turn and it will be
22 holding them probably up in this area two times.

1 It's well received.

2 We're typically getting over a hundred people both
3 from the regulator and from the industry and we're
4 also seeing international involvement, typically nine
5 to 13 people will come from different countries to
6 attend this.

7 COMMISSIONER SVINICKI: Thank you for the
8 fuller description. You mentioned my visit to Sandia
9 and I did have the opportunity to see NRC's fire
10 research there with Brian Sheron who heads our
11 Office of Research.

12 I don't want anyone at the table to take this the
13 wrong way but people who spend their entire careers
14 studying fire have some interesting
15 personalities. What it left me with on a
16 more serious note is, there's a lot of phenomenology
17 and a lot of behavior of fire. If it's not your
18 field I think you kind of take for granted that it's
19 just kind of a chaotic phenomenon and that how much
20 have you studied it for a long time could you really
21 come to a good data set about behavior and actually
22 there is a lot we do know it isn't as if there's

1 ignition and then it goes wherever it wants to.
2 It was really fascinating to spend that time and
3 understand about flame and flame behavior and just
4 all of the components here but it also
5 leaves me with a deeper understanding of the
6 complexity of these issues so with the previous
7 panel or as you talk about resolving issues.
8 Mark, you'd mentioned something that I had heard
9 about in a few years but I think maybe is sometimes
10 underutilized which is the expert elicitation
11 process. I think it can be really valuable in a
12 field like this in directing research in the most
13 productive -- again you mentioned the user needs
14 process and we do need to be driven by what the
15 needs are we just can't explore issues because of
16 their interest to us as a regulator we need to have
17 an application for what we fund but I think expert
18 elicitation and I think you talk about a facilitated
19 workshop which would be a great environment to come
20 up with the plans and constantly re-examine what are
21 the issues that we need to resolve.
22 We heard a little bit from EPRI in the last panel.

1 They had a very extensive list so when I compare
2 that, Mark, against your statement of being
3 responsive in the Office of Research to the user needs
4 process, EPRI has this larger universe of
5 things that need to be resolved and looked at with
6 that.

7 So I suspect within that there are things that are
8 appropriate for us to cooperate on and other things
9 probably that the industry should more directly fund
10 and might be near-term issues that it would benefit
11 them to resolve.

12 So I don't really think there's a question in there
13 anywhere but I appreciate, again I spent some time
14 recently on the research aspects of this question
15 and appreciate that you're driven by the processes
16 the user needs process and that it's just a very
17 complex question.

18 So I don't know if there's anything more generally
19 about moving forward in the future that you would
20 like to add to that, again I saw that cable testing,
21 saw some of the large-scale facilities that they have at
22 the national lab to do fire testing and they of

1 course do a lot of work to the military as well on
2 related questions.

3 Is there anything going forward, Dr. Klein asked you
4 about staffing and resourcing in Research but over
5 the longer term, do you think we kind of have the
6 size and scope of program that we need?

7 MR. SALLEY: The Office of Research pays a
8 lot of attention to the fire research and I think
9 we're where we need to be. There's going to be work, there's going to be
10 refinement. I think the low hanging fruit we've already picked
11 so we now need to get into the more refining of
12 the process and that's where we're focusing now.
13 Case in point is the flame spread.
14 There is a method in 6850 and when people do use it
15 yes the fire does seem to move a little too fast and
16 it's a first order principal type of approach so it
17 is conservative as people would say, we need to
18 study the phenomena of the cable trays burning and
19 get more research done on that so that we can refine
20 that and feel comfortable with it.
21 Those are the kinds of things we're working with
22 now.

1 Fire modeling, too, we look to advance it, we want
2 to push the state-of-the-art.

3 Hopefully we will get into a cycle of five year where
4 we're refining this and we'll continue to refine our
5 skills, that's our goal.

6 COMMISSIONER SVINICKI: Thank you.

7 Thank you, Mr. Chairman.

8 CHAIRMAN JACZKO: Thank you Commissioner
9 Svinicki.

10 Jack maybe I'll ask you or Alex either one of you want to answer this, you
11 did send us up earlier today, or yesterday, the update on the closure plan. One
12 of the big changes of course is the movement of the completion
13 date of the two pilots further out in the future and
14 certainly there are a lot of concerns expressed this
15 morning and I think fair points about some of the
16 challenges and uncertainties about the work that
17 we're still doing.

18 What should make the Commission believe now that the dates that we
19 now see in the closure plan, are going to be
20 met this time?

21 MR. GROBE: I think the most important
22 thing is that with respect to Harris all the

1 questions have been answered.

2 The licensee has incorporated all the effort from
3 the past year and a half's work into a revision of the
4 license amendment request and we're actually writing
5 the safety evaluation report.

6 It's frequent that in the course of writing safety
7 evaluation report the reviewer will scratch his head
8 and say I still got this one thing that I need to
9 get nailed down.

10 So it wouldn't surprise me if there's a few
11 additional questions but essentially the work is
12 done.

13 Now it's just writing a report and that the lengthy
14 process. The licensee would then once we complete the
15 report have 30 days to review it for accuracy and
16 proprietary information then it goes to tech editing
17 so just the issuance of that takes 8 to 12
18 weeks.

19 So we're done essentially with Harris except for the
20 paperwork.

21 The same thing would apply to Oconee but starting roughly in
22 January.

1 They anticipate finishing the last of the answers
2 and resubmitting a license amendment request that
3 incorporates all the information in one place and
4 then we'll be writing the Safety Evaluation Report.
5 So we're certainly rounding third and heading home.

6 CHAIRMAN JACZKO: It's good to hear.
7 I think as I said earlier this will be a good
8 enhancement to safety in having these first license amendment
9 requests completed and certainly decisions on those will
10 perhaps give us a the way to document that.

11 Mark, this is a follow on a little bit of what
12 Commissioner Svinicki was asking and Dr. Klein had
13 asked as well.

14 EPRI did have a list of items, I think Commissioner
15 Svinicki hinted at this, some of those may be appropriate for Entergy, some of
16 them may be activities to do in collaboration. Do you
17 have a sense of that particular list, is that
18 something that you worked with EPRI before, is it a
19 new set of information or do you have a sense of how
20 our research activities will coordinate with those?

21 MR. SALLEY: I had not seen that list
22 before that was an EPRI list, to me it looks like a

1 bunch of opportunities.

2 CHAIRMAN JACZKO: I should've never ask an open
3 question like that to researcher.

4 MR. SALLEY: We also have a list, and what we
5 will do under the MOU quarterly or at least
6 biannually is what we're trying to get at, we'll sit
7 down with EPRI and Ken and I, for example, will compare notes and we'll
8 sit down and say what are you doing, what are we doing?
9 Which ones can we do together to get the maximum
10 effect and which ones do you need to do separate and we need to do
11 separate, so there's a lot of communication.

12 The DC testing was one, for example, that we started
13 alone and we started moving and getting it in
14 process and talking with Ken, NEI, and the industry
15 and say that we'd like to contribute, we'd like to
16 give you some of the cables to test.

17 We'd like to take part of it and we amended the MOU
18 and we brought them on as a partner.

19 There's also the intellectual part, there's some very
20 good consultants that work for them that we can also bring
21 in.

22 Doing a joint project is always harder than going it

1 alone because you have the two groups so it's much
2 more of a challenge but I think at the end of the
3 day for the end-user it's better that we work
4 together when we can and get a single product and
5 not have competing methods where we fight about the
6 third decimal point, we look at the larger safety issue.

7 CHAIRMAN JACZKO: Thank you.

8 We heard a lot this morning and the title of
9 this meeting was lessons learned from the Harris
10 review and we certainly heard a lot I think this
11 morning from Shearon Harris themselves about some of
12 the lessons and the challenges, where would you say
13 we are at this point in incorporating those lessons, and the
14 staff you talked about the new Standard Review
15 Plan, you talked about Reg Guide 1.205.
16 Is that where the staff would say right now we've
17 documented those lessons learned or is that still
18 have to be processed a little bit?

19 MR. GROBE: I think there's two locations
20 where the lessons exist today, one is in the results
21 of the FAQs (the frequently asked questions) and the
22 second is the revision to Reg Guide 1.205.

1 That revision is essentially complete and it's
2 been a collaborative process. Both the industry and NRC
3 well understand the changes in that revision.
4 We're meeting with the chairman of the ACRS subcommittee
5 to make sure that there's no outstanding questions
6 that they have that we're unaware of.

7 We anticipate -- Alex said January -- I'm still
8 pushing for late December to have that on a street
9 as a final document.

10 It has gone through extensive industry comment so
11 the two sources of lessons learned are the facts and the Reg Guide..

12 CHAIRMAN JACZKO: I think the reasons for
13 the lessons learned is to make it more predictable
14 and I think easier for the subsequent applicants to
15 know exactly what information they need to include
16 in their applications as they go forward. As this
17 process improves, how long does the staff think it
18 will take to do perhaps the nth review for a
19 license amendment request in this area, perhaps
20 we're there already, maybe we need a few more
21 iterations of reviews to better understand what the
22 challenges are?

1 MR. KLEIN: The staff's estimation right
2 now for the initial license amendment requests that
3 are coming in sometime next year is anywhere from
4 one to two years.

5 Of course as we learn, as we progress, as we refine,
6 as we better understand things we think that by the
7 time we get through the nth plant license amendment
8 request that the timeframe would be something less
9 than one year.

10 But that's a prediction on my part, looking at my
11 crystal ball but I think given the number of
12 license amendment requests that are coming in initially and
13 given the staffing that we have and the resources
14 available that we'd be able to turn around a license
15 amendment request for the nth plant on something on
16 order of one year or less.

17 CHAIRMAN JACZKO: I think the last question
18 and this Donnie might be a question that you can
19 answer.

20 One of these issues that came up earlier is the
21 comparability of the fire PRAs to the power PRAs, the other internal
22 event PRAs we have.

1 In your sense, when do you think that
2 will get all of those to a common or to a level
3 which within a particular plant that the fire PRAs
4 will be comparable to the other internal event PRAs
5 and be able to be used in a comprehensive way or
6 consistent manner.

7 MR. HARRISON: I guess I would answer that
8 in two different directions, one would be you have to
9 take the application to the context of what the
10 decision you're making.

11 We've heard a lot of comments about conservatism and
12 bounding approaches.

13 It's not like there isn't conservatism in internal
14 events PRAs, there are, however they usually don't
15 drive the decisions therefore you can live with them
16 and so you have to look at the decision you're
17 making and if you can use the guidance that
18 we put out, work collaborative with the industry to
19 develop and you are able to come up with risk
20 results that support making decisions going forward
21 than you can live with those models the way they
22 are.

1 So that's one part of the answer. The other thing is when we
2 wrote Reg Guide 1174, which is the risk informed decision making guidance
3 document, the acceptance guidelines in there require that you use
4 a total CDF or a total large early release frequency value so it was
5 recognized in the late nineties that you needed to
6 be able to reflect on that.

7 If you didn't have a PRA you were supposed to have to
8 look to see if your IPEEE had vulnerabilities that
9 would make you question if you were higher in a risk
10 area than you were. With the development of fire PRA
11 methodology refinements and enhancements we'll have
12 actually a clearer answer to that question.

13 We won't have to rely on a subjective evaluation
14 of the IPEEEs, we'll actually have results that we can look
15 at.

16 That will actually make the decision making process
17 smoother.

18 So I guess that's how I would answer your question.

19 MR. GROBE: Donnie, I'm glad you brought
20 that up.

21 805 is just another in a long line of enhancements,
22 PRA enhancements, to our regulatory processes.

1 There's two initiatives on the table today.
2 It's the risk informed applications for allowed
3 outage times in the tec specs as well as the surveillance
4 frequencies.

5 Under Reg Guide 1.200 Revision 2, that's the Reg
6 Guide for doing PRA, when licensees come in for
7 those they're going to have to have an integrated
8 internal and external events PRA which not only includes
9 internal events and fire but also includes seismic.
10 Fire and seismic are the two biggest challenges
11 today. So those will all have to be melded together
12 and I anticipate in the next year to two years that
13 we're going to be getting a number of applications
14 for those tec spec enhancements which will integrate fire,
15 seismic and internal events.

16 CHAIRMAN JACZKO: I think it is one of the
17 side effects of the NFPA 805 transition that should
18 help those plants move along more quickly on having
19 their fire PRA.

20 The last question I have, and again this is for anyone who
21 wants to answer.

22 This is arguably a more complex way to address fire

1 protection. I'm always reminded that Appendix R is
2 somewhat simple. I can remember the three basic requirements,
3 the deterministic requirements in the regulations. Every time I read
4 NFPA 805 I learn something new.

5 How are we going to make sure that we are able to
6 communicate these results to the public?

7 I think that there were comments earlier about that
8 and I think that's a fair point and make sure that
9 the public can understand the decisions that we're
10 making and understand how we're fulfilling our responsibilities
11 there with a much more complicated framework.
12 I don't know if anyone has any thoughts on that.

13 MR. GROBE: Mr. Gunter raised two very
14 important issues. One is making sure that you don't apply
15 the models outside of their capability and we're
16 very focused on that and the second is the more
17 complex your analytical approach gets the more
18 difficult it is to explain it to the public.

19 Fire is one of the areas where we have one of the
20 most advanced websites.

21 There's a multitier website with high level
22 questions and then you can drill down in any

1 particular area to more detail or more detail.
2 That's been a collaborative effort between, NRR,
3 Research and our Office of Public Affairs to make
4 sure that is a user-friendly approach to the public
5 gaining information about how we do fire protection
6 regulation.

7 So it's one of, I think, our most successful
8 initiatives from the standpoint of making the most
9 effective use of our web resources.

10 CHAIRMAN JACZKO: I think that is certainly
11 one tool and I encourage the staff to continue to find ways to make sure that
12 we can communicate this because I think is a very
13 fair point that as these things get more complicated
14 they get harder to explain, and perhaps internally as
15 well.

16 Any other comments or questions?

17 COMMISSIONER KLEIN: Again I would like to
18 summarize and compliment the industry and the staff
19 for all the efforts that have been put forth on fire
20 protection.

21 I think while NFPA 805 was probably more challenging
22 both for the staff and industry than you expected

1 when you started down the path, I think the bottom line
2 is that the plants are safer, we know more and the
3 public is better protected by the actions that you
4 all have taken.

5 Thanks for the hard work.

6 CHAIRMAN JACZKO: Thank you very much that
7 concludes our meeting and we certainly look forward
8 to the staff continuing to make progress and
9 continuing to work on engaging,
10 improving the areas where we have some uncertainties
11 and continue to refine the models and the tools that
12 we have.

13 I appreciate the staff effort.

14 Thank you.

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