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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

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1 UNITED STATES OF AMERICA

2 NUCLEAR REGULATORY COMMISSION

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4 ADVISORY COMMITTEE ON REACTOR SAFEGUARD

5 (ACRS)

6 + + + + +

7 566th MEETING

8 + + + + +

9 FRIDAY, OCTOBER 9, 2009

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11 ROCKVILLE, MARYLAND

12 + + + + +

13 The Committee convened at the Nuclear  
14 Regulatory Commission, Two White Flint North, Room  
15 T2B3, 11545 Rockville Pike, at 8:30 a.m., Dr. Mario  
16 Bonaca, Chairman, presiding.

17 COMMITTEE MEMBERS PRESENT:

18 MARIO V. BONACA, Chair

19 SAID ABDEL-KHALIK, Vice Chair

20 J. SAM ARMIJO, Member-at-Large

21 GEORGE E. APOSTOLAKIS

22 SANJOY BANERJEE

23 DENNIS C. BLEY

24 CHARLES H. BROWN, JR.

25 MICHAEL CORRADINI

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## 1 COMMITTEE MEMBERS PRESENT: (cont.)

2 OTTO L. MAYNARD

3 DANA A. POWERS

4 HAROLD B. RAY

5 MICHAEL T. RYAN

6 WILLIAM J. SHACK

7 JOHN D. SIEBER

8 JOHN W. STETKAR

9  
10 NRC STAFF PRESENT:

11 SAM DURAISWAMY, Designated Federal Official

12 SUNIL WEERAKKODY

13 DAN FRUMKIN

14 FRANK AKSTULEWICZ

15 JERRY WILSON

16 JOHN TAPPERT

17  
18 ALSO PRESENT:

19 STEVEN HUTCHINS

20

21

22

23

24

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I-N-D-E-X

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Adjourn

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

8:28 a.m.

CHAIR BONACA: Good morning. The meeting will now come to order. This is the second day of the 566<sup>th</sup> Meeting of the Advisory Committee on Reactor Safeguards. During today's meeting the committee will consider the following: Draft Final Revision 2 to Regulatory Guide 1.189, Fire Protection for Nuclear Power Plants; 10 CFR Part 52 regulatory process; subcommittee report; future ACRS activities/report of the Planning and Procedures Subcommittee; reconciliation of ACRS comments and recommendations; draft ACRS report on the NRC Safety Research Program and preparation of ACRS reports.

This meeting is being conducted in accordance with a provision of the Federal Advisory Committee Act. Mr. Duraiswamy is the designated federal official for the initial portion of the meeting. We have received no written comments from members of the public regarding today's sessions. A transcript of portions of the meeting is being kept and it is requested that the speakers use the microphones, identify themselves and speak with sufficient clarity and volume so that they can be readily heard.

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1 With that we will move to the first item  
2 on the agenda, and that's Draft Final Revision 2 to  
3 the Regulatory Guide 1.189, Fire Protection for  
4 Nuclear Power Plants. And then turning to Mr. Sieber  
5 to lead us in that presentation.

6 MEMBER SIEBER: Okay, thank you Mr.  
7 Chairman. As all of you will recall at our September  
8 meeting we had a presentation on the revised Reg Guide  
9 1.189 which was Revision 2 for our approval. And  
10 during that meeting we learned that there were still  
11 some issues that were not completed at the time and  
12 those involved the safe shutdown and important safety  
13 issues. And there have been comments from the  
14 industry regarding that and a difference of opinion.  
15 At the time of the September meeting an agreement had  
16 been reached between the staff and the industry, but  
17 had not yet been formally incorporated into the reg  
18 guide. So we postponed our issuance of a letter until  
19 such time as the reg guide was finalized and  
20 concurrence was received. And I think those  
21 conditions have been met at this point in time.  
22 Rather than go through the entire reg guide again I  
23 propose that we focus our discussion on the changes  
24 made from what we heard at the September meeting and I  
25 also ask the staff to help us walk through again the

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1 discussion of safe shutdown path equipment and  
2 important to safety path equipment to see how these  
3 are treated in the fire protection regime, and they  
4 are treated differently. And I will use myself as a  
5 guinea pig during that discussion to demonstrate to  
6 you how much I do know or don't know about the subject  
7 as to how these should be treated. And I will rely on  
8 the staff to make appropriate corrections. I think  
9 any questions that members have at that time regarding  
10 this subject should be fully explored so that we  
11 understand exactly what's being proposed and how it  
12 will be treated. I appreciate the staff's coming back  
13 to us to give this presentation today and I would like  
14 to turn it over to Sunil Weerakkody to introduce Dan  
15 and give an introduction to the Rev 2 of the reg  
16 guide. Sunil?

17 MR. WEERAKKODY: Thank you, sir. My name  
18 is Sunil Weerakkody. I'm the deputy director of Fire  
19 Protection. Sitting next to me is Dan Frumkin. He's  
20 the team leader in charge of the easy-off circuits and  
21 operator manual action for fire protection. And  
22 sitting on that side is Alex Klein. He's a grantee  
23 for fire protection. Then let's go to the next slide.

24 Unlike the last several meetings, what I  
25 plan to do is to give some of the history or

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1 background. But let me just first come to the purpose  
2 of this meeting. We are here today to inform the  
3 committee of the background and regulatory context for  
4 Regulatory Guide. And we are also getting - and also  
5 we want to inform the committee that the guide is  
6 prepared and interoffice concurrences have been  
7 received for the guide. You know, when I say  
8 "interoffice concurrences" I specifically refer to the  
9 concurrence of Office of New Reactors, the legal, the  
10 Office of Research. And then obviously as Jack  
11 mentioned there are a couple of technical topics that  
12 you would like to hear from us and Dan will be going  
13 into discussion on those. And finally the main  
14 objective is to request this committee endorse the reg  
15 guide so that we can issue it as final. Next slide.

16 Background. I'm going to use some of my  
17 personal experiences here to give you a 5-minute walk  
18 through the background that led to the creation or the  
19 need for a revision to Reg Guide 1.189. I was the  
20 branch chief of Fire Protection from 2002 up to about  
21 2007, so some of this stuff I had the pleasure to  
22 endure during those five years and in a way I'm very  
23 pleased that it appears to be coming to an end. The  
24 nexus of the issue that we are dispositioning today  
25 with respect to multiple spurious I would say has the

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1 nexus to the initial rule that we published in 1981  
2 and the fact that there were several keywords in that  
3 rule such as "emergency control station," "important  
4 to safety," "associated circuits," that were never  
5 defined within the rule. Now, that's not uncommon.  
6 We have other rules even in our new rule in 805 or  
7 50.48(c) we have certain undefined terms. But one of  
8 the things that exacerbated this issue and created the  
9 problem we are trying dispositioning today is that  
10 when we issued Appendix I we did not issue a reg  
11 guide. In fact, we issued Appendix I in 1981 and  
12 because of numerous questions we got from the industry  
13 we issued a generic letter, which was a thick generic  
14 letter with a large number of questions and answers.  
15 So that was our attempt to give clarity, a little  
16 clarity five years later than this rule. And  
17 obviously in between this time, you know, different -  
18 due to the lack of reg guide the different  
19 interpretation of the rule and some of these term  
20 manifest themselves into the licensing basis of  
21 different licensees. In fact, when we issued Revision  
22 0 of the Reg Guide 1.189 I can't remember the exact  
23 year, even later than 1986. Now, one of the areas  
24 where we had questions was with testing the multiple  
25 spurious. And there were a number of differences

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1 between us and the industry and other stakeholders  
2 with respect to how important this issue is. So  
3 therefore as we started this in late '90s NEI stepped  
4 up and said okay, we will you know, do some testing  
5 and show you why this is not an issue that is  
6 important to safety. When we did the testing we found  
7 out the contrary which is we found out that, you know,  
8 finding the shorts are credible and regulatory  
9 intervention is necessary. Now, this happened in I  
10 believe 1998?

11 MR. FRUMKIN: 2000.

12 MR. WEERAKKODY: In 2000, that timeframe,  
13 and since the test came to light, you know, first  
14 thing we did was we incorporated those insight  
15 inspection process to make sure that our safety is  
16 continually assured during our inspection, but we had  
17 a lot of challenges in terms of incorporating those  
18 test results with the interpretation of the regulatory  
19 framework. One of the challenges was the implications  
20 of that. By that time in fact we had a couple of  
21 safety evaluations we had issued to Byron and  
22 BraidWood where the staff specifically accepted the  
23 single spurious. So this was the regulatory context  
24 that we were facing. Then in 2006 the staff, you know  
25 that's us, we tried to solve this issue in somewhat of

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1 a conservative way. There was uncertainty, but you  
2 know, as regulators usually do we said let's solve it,  
3 let's take the conservative approach and the generic  
4 letter that we tried to issue did not make any  
5 distinction important to safety as required. We  
6 basically told the licensees are circuits are at play  
7 and everything should be considered as required.

8 Obviously as you have heard numerous  
9 times, the Commission did not approve. In fact, the  
10 Commission inserted themselves and said no, you cannot  
11 issue this generic letter, it does not provide the  
12 practical ways that the industry can use to resolve  
13 this issue. And basically directed us to work with  
14 the industry in 2006 to come to a viable solution.  
15 And that's where I think - in fact, Dan Frumkin  
16 sitting here used his creative knowledge to come up  
17 with the concept of, you know, let's create these two  
18 categories: important to safety and required. And  
19 obviously when you have a hundred different plants out  
20 there with different configurations, different  
21 systems, interlocks, this was a big deal in terms of,  
22 you know, coming up with the context to create two  
23 classes was the easy part. Then we had multiple,  
24 multiple meetings with the industry to come up with I  
25 would say as opposed to a method, more of a consensus

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1 as to what should belong to what category. But in the  
2 end we got to an end where the staff can absolutely  
3 say we have a method that gives us enough regulatory  
4 oversight to make sure that the plants remain safe.  
5 And that's what we have been presenting during the  
6 last several meetings. And that's why we believe as  
7 the last bullet says here that we believe that we have  
8 fulfilled the direction we got from the Commission to  
9 come up with a practical method. And it's good to  
10 know that industry has agreed with that, but even  
11 though we would have gone forward with what we  
12 proposed because we believe it's what is necessary for  
13 safety. Next slide.

14 To summarize, we believe that the staff  
15 has to put out a regulatory guide that has received  
16 the concurrences from all offices and just for full  
17 disclosure we had to make minor legal-type, legal  
18 language-type changes to accommodate some of the minor  
19 comments that we received from the Office of General  
20 Counsel. And there was one comment from the Office of  
21 New Reactors basically saying, you know, use the -  
22 refer to the right rule in terms of the change  
23 analysis. Other than that, what we shared with you 10  
24 days ago is what is the final draft reg guide.  
25 Obviously it doesn't become final until we get your

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1 endorsement and we issue it.

2 And one point I really, really want to  
3 stress is the last point here. We believe the staff  
4 has developed an update to the Regulatory Guide 1.189  
5 that enables the staff to disposition circuit issues  
6 in a manner that assures plant safety and adequate  
7 protection. And I had a very basic reason for saying  
8 that. As reflected by the discussions in the several  
9 meetings before, the distinction between important to  
10 safety and required, we would love to have a very,  
11 very clear line there and you know, speaking very  
12 honestly I think there will always be some ambiguities  
13 there. But where there will be no ambiguity when I  
14 say that this is enough for us to maintain adequate  
15 protection, there is no ambiguity there. And the  
16 reason I say that is that in spite of some of the  
17 grievances, please note that even those circuits that  
18 are categorized as important to safety, the staff  
19 requires their functionality when they are subjected  
20 to realistic fire scenarios. If you recall, one of  
21 the areas where we did not agree with the licensee,  
22 which was Appendix E, where they were proposing  
23 certain method of operator manual action in our T<sub>0</sub>-type  
24 discussions, we want to make sure that we did not  
25 grant that difference and we stayed with our position

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1 because we firmly believe that the staff, that's us,  
2 had to make sure that both important to safety and  
3 required systems must stay functional in light of what  
4 are the realistic fire scenarios that they will  
5 confront. Thank you for your patience. I took a  
6 little bit of time here, but I really, you know, we  
7 really want to give you everything we can tell you  
8 with this reg guide today and answer all your  
9 questions. With that I'm going to turn it to Dan now  
10 for this issue.

11 MEMBER SIEBER: Let me interrupt just a  
12 second. During this period when all this advancement  
13 and formulation of this reg guide took place there was  
14 enforcement discretion exercised by the staff. And  
15 that means that inspection of plant facilities and the  
16 way they handle this were suspended for the details  
17 until the issue was resolved. And we want to end that  
18 period of enforcement discretion. When this reg guide  
19 is issued, that will end the period and start a  
20 timetable for compliance which I think is an important  
21 measure and an advancement in fire protection. And so  
22 it's essential that we've got to deal with this.

23 MEMBER ARMIJO: What is the timeframe for  
24 compliance? Are some plants in compliance already, or  
25 is this going to be a very slow?

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1                   MEMBER SIEBER:     It's not particularly  
2 slow. Dan?

3                   MR. FRUMKIN: Yes. My name's Dan Frumkin.  
4 I'm the Fire Protection team leader at NRR. The last  
5 slide where we discuss the period of basically  
6 removing the enforcement discretion that's in the  
7 enforcement guidance memorandum and from the issuance  
8 of the reg guide the licensees will have six months to  
9 identify multiple spurious scenarios that could  
10 adversely affect safe shutdown, and after that six  
11 months they'll have another 30 months to resolve those  
12 non-compliances under enforcement discretion. One of  
13 the things I've heard through hallway conversations  
14 with many licensees is they're anticipating this  
15 issuance and some have already engaged contractors or  
16 begun work on this. So that's a very promising thing  
17 for the regulator to hear, that they're working on  
18 this resolution even in advance of the issuance of  
19 this document.

20                   MEMBER ARMIJO: Thanks.

21                   MEMBER SIEBER: Yes, and I think that this  
22 schedule is expeditious, but it does allow for the  
23 fact that some plants are on 2-year refueling cycles  
24 and you have to wait until the refueling occurs to be  
25 able to make some physical changes in the plant rather

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1 than attempt to do that during operation which in a  
2 lot of cases would be not possible. And so for plants  
3 on 2-year refueling cycles, they have one shot to make  
4 this change. Dr. Apostolakis?

5 MEMBER APOSTOLAKIS: How does this relate  
6 to NFPA 805?

7 MR. WEERAKKODY: The plants that are  
8 transitioning to NFPA 805 are using - their licensing  
9 basis will be multiple spurious. They will -  
10 obviously they have the added benefit of solving this  
11 issue with the fire PRA that has been peer reviewed.

12 MEMBER APOSTOLAKIS: So this is not  
13 contributing at all to that development?

14 MR. WEERAKKODY: Well I'm going to say  
15 that is - they are solving this issue during their  
16 transition to 805 in a manner that is acceptable to  
17 us.

18 MEMBER APOSTOLAKIS: That is what?

19 MR. WEERAKKODY: That is acceptable to us.

20 MEMBER APOSTOLAKIS: But that's different  
21 from this?

22 MR. WEERAKKODY: It's consistent with  
23 this.

24 MR. FRUMKIN: Right. The NFPA 805 plants  
25 have the ability to carry forward their existing fire

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1 protection program when it's in compliance. So this  
2 defines compliance for their existing fire protection  
3 programs. So this is of quite a bit of interest to  
4 NFPA 805 plants in that they now have the ability to  
5 really understand what is compliance for their  
6 existing fire protection program. But that said,  
7 they're going to be taking this process and running it  
8 through their fire PRAs and further identifying  
9 vulnerabilities.

10 MR. WEERAKKODY: I can answer. The  
11 document that we are endorsing through this reg guide  
12 is NEI 00-01 Revision 2. In that revision there's a  
13 Chapter 3 that tells licensees how to select the  
14 circuits. People who are transitioning to 805 rely on  
15 that same chapter. So they go to the same NEI book.  
16 The only difference is how you bring PRA, but 805  
17 plants also rely on some sections of the same guide.  
18 So there is consistency at that level too.

19 MEMBER SIEBER: Let me add one thing. In  
20 the deterministic set of rules which 1.189 puts forth,  
21 risk information is allowed for equipment important to  
22 safety, but not the safe shutdown path. For example,  
23 if manual operator actions was used and potential for  
24 a multiplicity of failures exists, risk information  
25 can be used to find the right path to bring the plant

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1 into compliance if possible. Otherwise, physical  
2 changes to the plant would have to be made. So risk  
3 information can be used regardless of the regimen.  
4 It's the set of rules that one follows to come to a  
5 conclusion that differs between the two approaches.

6 MEMBER STETKAR: Sunil, could you help me  
7 a little bit? You mentioned the consistency in terms  
8 of the criteria that NEI 00-01 used for selection of  
9 circuits and things like that, regardless of which  
10 approach you're taking. There does seem to be some  
11 inconsistency in the way that manual operator actions  
12 are treated between the deterministic and the  
13 probabilistic approaches because the - if I remember  
14 correctly, the deterministic approach basically says  
15 that if you have - if you can justify one hour  
16 available then you basically take full credit for any  
17 operator actions, whereas the probabilistic approach  
18 says that you need to do an analysis to show that you  
19 have the amount of time available compared to the  
20 amount of time that's required to implement an action  
21 is at least reasonable or something like that. I  
22 don't recall the words.

23 MEMBER SIEBER: And that's why I ask -

24 MEMBER STETKAR: Even if there was more  
25 than one hour available, that might still not be an

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1 acceptable operator action within the context of the  
2 risk-informed approach. If there was less than one  
3 hour available on the contrary it also might be  
4 acceptable. So I was curious whether you could  
5 comment on that. Or perhaps my interpretation isn't  
6 correct.

7 MEMBER SIEBER: Well, that's why I asked  
8 to bring up that particular slide where we will get  
9 into that in detail.

10 MEMBER STETKAR: Okay, you're going to  
11 have -

12 MEMBER SIEBER: The second half of the  
13 presentation deals with that.

14 MEMBER STETKAR: I'll wait.

15 MEMBER SIEBER: That was a great  
16 introduction.

17 MEMBER STETKAR: Well, he mentioned it and  
18 you mentioned it, so I thought.

19 MR. FRUMKIN: Well quickly, I mean, as the  
20 two technical issues that we were going to be bringing  
21 up is - one is this distinction between the safe  
22 shutdown success path equipment which is for  
23 convenience called the green box because of the colors  
24 on the picture and then there's also the components  
25 important to safe shutdown which for convenience we've

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1 been calling the orange box. And the main point that  
2 Sunil brought up a number of times is that both of  
3 these types of equipment require protection sufficient  
4 enough to assure safety. Only the safe shutdown  
5 success paths require Appendix R III.G.2 protection.  
6 So in the example that you gave, if an hour isn't  
7 sufficient to assure safety, that would not be  
8 acceptable. And under the deterministic manner. So  
9 that's the key point. They'd have to use a tool that  
10 is sufficient to assure safety. So if manual actions  
11 are not sufficient, they would need to use a different  
12 tool, which takes us to the diagram.

13 MEMBER SIEBER: Let me amplify that just a  
14 second. Appendix R III.G.2 requires four elements of  
15 fire protection, all of which are physical. One of  
16 them is detection, combustion detectors, whether smoke  
17 detectors, infrared, or what you, suppression, which  
18 is a sprinkler system or an equivalent to a sprinkler  
19 system, separation. This is the 20-foot separation,  
20 and/or compartmentalization as I would call it which  
21 is the 3-hour fire barriers. If you protect one train  
22 and the fire is in that train, the other one is  
23 automatically protected because the same rules work in  
24 reverse. And so since you have two trains protecting,  
25 one train actually protects both of them because

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1 you're protecting one train from the other train.

2 MEMBER STETKAR: Dan, I come back to  
3 thinking about how people are going to practically  
4 implement this guidance. And there are tables that  
5 give me examples. And I have in Section 5.3.1.5 I  
6 guess a table that says Examples of Safe Shutdown  
7 Success Path SSCs, and that example, one example is  
8 significant diversion paths from flow path that would  
9 lead to core damage or cause reactor coolant loss if  
10 diverted for one hour or less. That means if it's  
11 diverted for 1.01 hours it is not a safe shutdown  
12 success path which means that implicitly we're taking  
13 credit for people doing something in 1.01 hours,  
14 aren't we?

15 MEMBER SIEBER: No.

16 MEMBER STETKAR: Okay. I need to  
17 understand that. Because that says one hour.

18 MEMBER APOSTOLAKIS: You are pushing it to  
19 the extreme.

20 MEMBER STETKAR: But I am thinking about  
21 how people are going to implement this, George, and if  
22 I'm doing the analysis and I'm thinking about at a  
23 power plant which box am I going to put this  
24 particular valve in and I say that I have 1.25 hours  
25 according to this guidance I'm going to put it in the

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1 not required for safe shutdown box because the  
2 guidance says I don't have to.

3 MEMBER SIEBER: Let's take a look at this  
4 chart up here. The valve on the left is really the  
5 one that you're talking about.

6 MEMBER STETKAR: That's one of the ones,  
7 but I'm talking about not only that valve because -  
8 but I'm talking about this one hour also.

9 MEMBER APOSTOLAKIS: Why don't we let Dan  
10 tell us what's in the figure and then.

11 MR. FRUMKIN: Sure. This is the figure  
12 that we actually - this figure is in the original  
13 Commission paper 08-001 and what it indicates is that  
14 there's this grey vessel and a protected train which  
15 is the green shaded area that leads to a vessel where  
16 you want to get your inventory. Now, what the orange  
17 ovals indicate are valves or pumps or combinations  
18 thereof that could somehow inhibit the ability to  
19 maintain the inventory of the - in the blue vessel on  
20 the right-hand side of the figure. So for example,  
21 one would be this tank drain valve. If the tank were  
22 to drain, the inventory in the blue couldn't be  
23 maintained indefinitely. The intention of this  
24 redundant system is to be describing an RHR versus a  
25 RCIC - or a RCIC versus HPCI system where that

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1 overfill of the blue system might have a backwards  
2 effect and affect the - if this pump were to  
3 spuriously start, it could feed back and affect the  
4 ability to safely shut down. And again, the PORV or  
5 an SRV is the number two and then number three is an  
6 RHR-type draindown system. So that's what's going on  
7 in this figure.

8 MEMBER APOSTOLAKIS: So you're making a  
9 distinction between important to safety and what's the  
10 other one, required?

11 MR. FRUMKIN: Yes.

12 MEMBER SIEBER: Shutdown path.

13 MR. FRUMKIN: Right.

14 MEMBER APOSTOLAKIS: Now, I really don't  
15 see the difference. I mean, if any of these valves  
16 opens I have failure, don't I? Why is that important  
17 to safety but not required?

18 MR. FRUMKIN: And exactly. That's the  
19 point of my backup slide is that it's not a technical  
20 distinction, it's a legal distinction. And the legal  
21 distinction is that if something is part of the hot  
22 shutdown train you need to move III.G.2 and have one  
23 of the III.G.2 protection schemes. But if it could  
24 affect the hot shutdown train, you have more options  
25 available.

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1 MEMBER APOSTOLAKIS: Let's go back. It  
2 doesn't make sense.

3 MEMBER CORRADINI: I'm sure it doesn't, I  
4 just want to make sure -

5 MEMBER APOSTOLAKIS: Why are you sure?

6 MEMBER CORRADINI: So the way you  
7 described it legally, the second option is orange, the  
8 first is green?

9 MEMBER APOSTOLAKIS: Yes. The more  
10 stringent one is green, right?

11 MR. FRUMKIN: The most stringent one is  
12 green, correct.

13 MEMBER APOSTOLAKIS: So now, why am I  
14 protecting the green more than the orange? Since  
15 orange can defeat the function too.

16 MR. FRUMKIN: I heard the answer from this  
17 side of the room.

18 MEMBER APOSTOLAKIS: What is that?

19 MEMBER SHACK: Because that's what the  
20 rule tells you to do.

21 MEMBER APOSTOLAKIS: But -

22 MEMBER STETKAR: The rule says you have to  
23 protect the health and safety of the public. The rule  
24 is interpreted by people who draw boxes and put things  
25 in tables. And my question comes back, Dan, to the

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1 subcommittee meeting. Suppose the valve on the lower  
2 left, if it opens spuriously, drains that tank  
3 completely in 45 minutes.

4 MEMBER SIEBER: Let's go through how we  
5 treat that.

6 MEMBER STETKAR: Why is that valve orange?

7 MEMBER SIEBER: Well, let's go through it.

8 Both green and orange require protection. The green  
9 requires III.G.2 protection which is the four elements  
10 that I discussed before. The orange elements - I  
11 guess that color is orange, right?

12 MR. FRUMKIN: Right.

13 MEMBER SIEBER: Okay. For example, the  
14 valve on the left. If it were a small valve and it  
15 spuriously operated, water would drain from the tank,  
16 okay? Now, let's figure out just for a second what  
17 you can do about that. Now, that means since it's  
18 orange you can use operator actions to run out there  
19 and close the valve, okay? Now, there was a timeline  
20 described that says from the time the fire started  
21 until the end of the allowed time for operator action  
22 is one hour plus the time for the detector to work  
23 which is sometime after the fire starts, a 10-minute  
24 period for people in the control room to assemble the  
25 emergency squad and the fire protection squad, figure

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1 out what's going wrong and if a spurious emission  
2 operation occurs to send an operator out, and that's  
3 the 1-hour period. So it's longer than that. When  
4 the fire starts, the analyst sits down and does his  
5 fire model and says how long will this fire burn with  
6 this amount of combustibles in this room until it  
7 causes a spurious operation. He comes up with a time.

8 Now, if that valve spuriously operates in that period  
9 of time which may be less than an hour and drains that  
10 tank below the level where it can no longer fulfill  
11 its function, then operator action cannot be used.

12 MEMBER STETKAR: Then I need some  
13 clarification because I'm, again, reading from a table  
14 that if I'm a utility employee trying to decide what  
15 box, whether it's a green box or an orange box to  
16 place that particular valve, the table simply says  
17 success path supply tank spurious drain or bypass is  
18 always orange. It has no qualification about the size  
19 or the time or anything. It says, as shown on this  
20 drawing, that that valve is always orange regardless  
21 of its size.

22 MEMBER SIEBER: That's true.

23 MEMBER STETKAR: So my - but that seems  
24 contrary to what you just said.

25 MR. FRUMKIN: Well, one different way to

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1 look at this is that the green components are required  
2 - well, except for that - the one bypass valve, the  
3 draindown valve which is a technical complexity. But  
4 the vast majority of the green box components are  
5 required to operate. The active components. The vast  
6 - all of the orange box components are required to  
7 stay the way they are.

8 MEMBER STETKAR: But there's a requirement  
9 in the rule that I must consider spurious operations  
10 equipment.

11 MEMBER SIEBER: That's right.

12 MEMBER STETKAR: So therefore, something  
13 that can operate spuriously from a function is every  
14 bit as important as something that is in standby and  
15 must start. From the purpose of the rule. It is  
16 functionally equivalent because I must consider the  
17 fact that that thing can operate spuriously.

18 MR. FRUMKIN: Protection is required.

19 MEMBER STETKAR: Protection is required  
20 but that protection for an orange then can be  
21 implemented by an operator manual action.

22 MEMBER SIEBER: Provided he can do it in  
23 time.

24 MR. FRUMKIN: Right.

25 MEMBER SIEBER: If he can't, then it goes

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1 - then you have to protect it another way to make sure  
2 that it meets the criteria. Even though it's orange  
3 you may have to use III.G.2 protection on it.

4 MR. FRUMKIN: That's exactly the point.

5 MEMBER APOSTOLAKIS: If the valve is open,  
6 let me understand this. If the valve on the left is  
7 open I begin draining the water from that gray tank.  
8 Then what is the expectation, that what will happen?

9 MR. FRUMKIN: The expectation is that the  
10 licensee will have facility to close that valve or  
11 before the capability to achieve and maintain safe  
12 shutdown is affected. Now, licensee may actually have  
13 another tank that they can turn on a switch and refill  
14 that tank.

15 MEMBER APOSTOLAKIS: How will they know  
16 that water is being drained?

17 MR. FRUMKIN: If they don't have the  
18 capability to know that the water's being drained then  
19 it is not a feasible and reliable manual action. So  
20 implicit in this orange box is the capability to know  
21 that your safe shutdown capability is being affected.

22 So if that -

23 MEMBER APOSTOLAKIS: And this is  
24 independent of how much water is being drained  
25 according to Mr. Stetkar?

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1 MR. FRUMKIN: Well, if it were a - if they  
2 had a valve that could spuriously actuate and it  
3 wouldn't drain the tank to a challenging point within  
4 a hundred hours, they wouldn't necessarily need to be  
5 monitoring that because it would be far too slow to be  
6 a credible adverse effect to safe shutdown.

7 MEMBER APOSTOLAKIS: If it can do it in 40  
8 minutes then they would be required to monitor it?

9 MR. FRUMKIN: Yes.

10 MR. WEERAKKODY: Can I?

11 MEMBER BLEY: I think from where I'm  
12 sitting hearing all this, the problem I see is really  
13 closely related to what John says. People will go to  
14 the table, they'll use the table. There are words  
15 other places that say what has to happen. You guys  
16 could catch it in a review process, but why should  
17 that have to be? The key information could be on that  
18 table. Right on there it could say if these can't be  
19 done within the associated time, these are green  
20 things, you've got to revert. It seems really kind of  
21 an arbitrary distinction and one that puts the onus on  
22 somebody to do a little more and find it, or you guys  
23 to catch it in review which I'd rather have you not  
24 have to do. If it were real clear from that table it  
25 would simplify things.

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1           MEMBER SIEBER: I think the rule should  
2 not require more than it is necessary to provide  
3 health and protection to the public. That's why you  
4 have this flexibility for orange-type components.

5           MEMBER ARMIJO: Right. But if they start  
6 out as green until proven orange, right? You should  
7 start out to when you're doing your analysis to  
8 determine whether it should be green or orange because  
9 -

10           MEMBER SIEBER: That's one approach, but  
11 it doesn't say that and I don't think you have to do  
12 that. For example, if I were to - as a fire  
13 protection engineer, if I were to identify the green  
14 path and say I need to apply these four  
15 characteristics of III.G.2 Appendix R. The other  
16 stuff I'm going to have to analyze individually, which  
17 includes the effect of when the fire starts versus  
18 when I know that it starts, how long it takes the  
19 operator to do it, how much damage is being done  
20 because we've done all this cable testing, and there's  
21 charts that say this kind of cable is going to fail at  
22 this point in time, okay? And there's some  
23 distribution about that because we tested more than  
24 one cable. And with that, do an HFA, Human Factors  
25 Analysis, to determine whether an operator can get out

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1 there and do that within the hour that's allowed after  
2 he's told to go. Okay, he's told to go 10 minutes  
3 after the detector goes off, but your fire analysis  
4 starts at time zero, okay? And it depends on the size  
5 of the valve whether you're successful or not. Would  
6 you know whether you're successful as a control room  
7 operator? Yes, because the tank has a level indicator  
8 on it and if it's important to safety it has two, one  
9 for each train.

10 MR. WEERAKKODY: If I may, I may have said  
11 something that in answer to your question, Dr.  
12 Apostolakis's question where the consistency between  
13 this method with 805. At some levels it's consistent  
14 in terms of the circuit identification and the fact  
15 that you look at multiple spurious. In our 805 plants  
16 you don't worry about colors. You focus on the  
17 functionality, modeling the PRA and whatever the PRA  
18 tells you to do based on the regulatory requirements  
19 you do. And that's why, you know, we do not even have  
20 to go to this level of argument. If you need it, you  
21 need it, you model it, you move on.

22 Now, if I take this figure and restate  
23 what we tried to do with that generic letter, we  
24 basically said okay, let's - everything is equal, you  
25 know, let's interpret the rule in a more conservative

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1 way. We are not going to make a distinction. We tell  
2 licensee everybody should do perfect everything.  
3 Unfortunately, the Commission did not agree that is  
4 the way to go forward and one of the reasons was the  
5 somewhat - some of those undefined words that I said  
6 in the rule. Unfortunately, when I listen to Member  
7 Stetkar and then talk about the diversion path as an  
8 engineer I could look at it and say yes, he's right.  
9 But I cannot, I cannot overcome what was in the rule  
10 in '81 which was never defined. So we are - we have  
11 those constraints within which we are come up with  
12 solution.

13 And my final point is I think, you know,  
14 even with this guidance there's always room for some  
15 clarification. But I would restate that including  
16 that diversion well which I would say if it is open  
17 and if you let it drain out, you know, you dry out the  
18 core. I remember Member Stetkar saying in a previous  
19 meeting, well, if that's going to dry out the core  
20 it's not important. Our feeling, it is very, very  
21 important, but one of the things we are - it is  
22 important to safety. The staff and the requirements  
23 require a licensee to make sure that everything is  
24 there to make that happen. And I don't know if I  
25 mentioned NUREG-1852. George probably remembers all

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1 the details. We issued a NUREG called 1852 several  
2 years ago where the staff went through a lot of  
3 discussions on what do we consider is an adequate  
4 operator manual action. In there we basically tell  
5 the staff expectations with respect to the  
6 instrumentation, the timing and all that that the  
7 licensee must have for that particular valve to be  
8 functional. So when I said that I had no ambiguity  
9 that we have something here that not being like the  
10 most logical, something that assures fire safety I  
11 mean it because not just what's in here, but because  
12 we have done over the last few years in other  
13 clarifications.

14 MEMBER APOSTOLAKIS: Help me understand  
15 this a little better. First of all, I really like  
16 what Dr. Armijo said, and I don't know whether that  
17 went over our heads. He said - I think what you said  
18 Sam is start with green everything and then give  
19 arguments why certain things should be orange.

20 MEMBER ARMIJO: Prove to yourself - it  
21 could be orange.

22 MEMBER APOSTOLAKIS: Is that something  
23 that is in the spirit of this guide? Or are they  
24 going to do it anyway? I mean, you don't have to tell  
25 them that, but when they give you something that's

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1 orange, they are prepared to argue why it is orange.  
2 In practice they are doing that.

3 MR. FRUMKIN: And that is exactly the  
4 approach that we tried in 2006 is presume that  
5 everything needs protection and then you can come in  
6 with - actually, you would have to come in with an  
7 exemption to the rule if it doesn't need protection,  
8 if that's the interpretation.

9 MEMBER APOSTOLAKIS: I'm not saying I  
10 would go that far.

11 MR. FRUMKIN: But that's what happened  
12 with the rule over 33 years is with the various  
13 interpretations of the rule where a licensee had  
14 equipment that could adversely affect the ability to  
15 safely shut down under some conditions, they were  
16 submitting exemptions for other equipment of similar  
17 types that couldn't adversely affect safe shutdown.  
18 And so this became an extreme regulatory burden - or  
19 unnecessary regulatory burden to do these things, and  
20 basically what happened on the part of the licensees  
21 is they didn't really do very much. And in 1997 when  
22 the inspections picked up we started finding a lot of  
23 licensees that hadn't done very much. And that's why  
24 licensees have gone to 805 and so forth. So this is a  
25 reasonable reading of the rule that doesn't impose the

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1 regulatory burden of let's protect everything except  
2 what doesn't need to be protected. This actually  
3 draws a line and says protect this and ensure that  
4 this doesn't affect safe shutdown.

5 MEMBER APOSTOLAKIS: Now, if I have two  
6 licensees that have the same system, right? They are  
7 the same, the two plants. One licensee follows NFPA  
8 805, the other follows this. Which one will end up  
9 with more stringent requirements for these valves?

10 MR. FRUMKIN: In the green box, the non-  
11 805 licensee will have more stringent requirements  
12 because they will be required to meet the III.G.2  
13 protection and they won't have the flexibility of  
14 doing a risk analysis without coming in for an  
15 exemption. When we get to the orange box  
16 characteristics, they're both performance-based. Now,  
17 the non-805 licensee really has a higher standard  
18 because they have performance-based without the  
19 benefit of risk analysis because to do risk analysis  
20 as a non-805 licensee they would be coming in under  
21 1.174 with their risk analysis. So they have really a  
22 fairly deterministic kind of performance-based  
23 analysis to do, whereas the NFPA 805 could actually  
24 have a very close to margin analysis -

25 MEMBER APOSTOLAKIS: Even if they are, if

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1 they want to claim credit for operator action and they  
2 follow, say, NUREG-1852, that is less forgiving than a  
3 rigorous human reliability analysis, correct? It's  
4 much more stringent in terms of - and that's the way  
5 it should be. I think we've discussed many times in  
6 this room that if you decide to go the deterministic  
7 approach you have to pay a price. Okay.

8 MEMBER SIEBER: On the other hand, for  
9 items that are not green, the same rules of risk  
10 assessment, including fire analysis, HRA and all those  
11 factors are the same from 805 - or 189 licensees to  
12 205 licensees. And so they can both use risk  
13 information, but it's limited in the case of the  
14 deterministic ones because they want physical  
15 barriers, physical instrumentation, detection,  
16 suppression and all that for the safe shutdown path.

17 MEMBER APOSTOLAKIS: But if I'm  
18 implementing this thing, the deterministic approach,  
19 and I have a human action someplace, I cannot for  
20 example go and use ATHEANA, right? I have to stick to  
21 1852. You cannot be probabilistic -

22 MR. FRUMKIN: Right, exactly. Right, and  
23 if you're going to use ATHEANA then you fall under the  
24 Reg Guide 1.174 and that - well, pulling in that reg  
25 guide pulls in the need to submit your analysis and

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1 have a full PRA almost.

2 MEMBER SIEBER: That's a key point because  
3 if you follow the guidelines here you don't have to  
4 make submissions for less than deterministic fixes for  
5 orange items. But if you go to the full-blown 1.174  
6 you have to make a submittal, okay? And one of the  
7 motivations here, not the primary one, but one of them  
8 is to reduce regulatory burden. A sea of paper going  
9 back and forth between this building or the one next  
10 door and licensees all over the United States is not  
11 ideal.

12 MEMBER APOSTOLAKIS: So close this out.

13 CHAIR BONACA: Are you going to finish the  
14 presentation?

15 MEMBER APOSTOLAKIS: Well, let me ask  
16 since the issue was raised. Mr. Stetkar, are you  
17 still unhappy? More than usual?

18 MEMBER STETKAR: I'm bothered by the fact  
19 that if I read the reg guide and I read NEI 00-01  
20 they're very, very black and white with respect to  
21 certain classifications of equipment that is a priori  
22 categorized as orange without -

23 MEMBER APOSTOLAKIS: Is it a matter of  
24 language, you think?

25 MEMBER STETKAR: I think it's a matter of

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1 language and examples. I was just looking at NEI 00-  
2 01 Appendix H which the reg guide refers to, and  
3 there's - in very clear terms there's a bullet. Any  
4 component whose fire-induced spurious operation can  
5 cause a flow loss from the reactor pressure vessel or  
6 from a tank providing a suction source for a system  
7 performing a required or safe shutdown function is an  
8 important to safe shutdown component. That is simply  
9 a definition. By definition it is orange. No  
10 previous analysis, no evaluation of the size, no  
11 evaluation of the time, it is by definition according  
12 to these words orange. I do not need to protect it by  
13 III.G.2.

14 MEMBER SIEBER: And so what difference  
15 does that make? That means that you have a broader  
16 scope of protective -

17 MEMBER STETKAR: My point is why do I have  
18 to protect that green thing because it's got an  
19 alternative when I don't have to protect that one  
20 valve.

21 MEMBER MAYNARD: I really believe this is  
22 a reasonable approach. When I started in commercial  
23 nuclear power in the early '80s, 1983, I started  
24 dealing with this issue. We've operated for over 25  
25 years with different opinions and different

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1 interpretations and battles. I really think it's time  
2 to get some guidance out there. Every time we have  
3 somebody else take a look at this there's always  
4 better ideas and there's things that we want to  
5 change, and this thing could go on another five or ten  
6 years. I personally think it's more important to get  
7 some guidance out there. Even though it may not be  
8 perfect and later may find some things that need to be  
9 changed, I think it's more important to get it out  
10 than to continue to revise this thing. Again, orange  
11 doesn't mean no protection. It doesn't even really  
12 mean less protection than green. It's a different  
13 process you've got to go through to define what the  
14 level of protection is. So I think it's more  
15 important to get some guidance out there rather than  
16 to continue to try to revise it.

17 MEMBER RAY: Well, John, do you see  
18 compliance problems?

19 MEMBER STETKAR: No, I - by the way, I  
20 agree with Otto. I think it is important to get this  
21 out.

22 MEMBER SIEBER: That's the key point.

23 MEMBER STETKAR: I do wholeheartedly agree  
24 with Sam's approach that basically everything on that  
25 drawing should start out green and the applicant or

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1 the licensee should be required to justify why  
2 something is orange and not green rather than a priori  
3 -

4 MEMBER ARMIJO: - justify to themselves.  
5 Not necessarily to the staff, you know. It's your  
6 plant. If you want to -

7 MEMBER STETKAR: But a priori there needs  
8 to be guidance. What I'm concerned about a bit is  
9 people following the letter. The reason that I quote  
10 these quotes verbatim is following the letter and  
11 looking at tables of things and say, well, the  
12 guidance told me. I read these words and I interpret  
13 them in a certain way and they put items in a certain  
14 table, and therefore you told me that I am supposed to  
15 put this thing in that box. You told me that. And  
16 later when we have discussions about approval of the  
17 fire protection program, there are areas that seem  
18 fairly obvious that the staff will need to be very  
19 vigilant in terms of the licensee's justification.  
20 All I'm trying to do is see if there's any way to head  
21 off a little bit of that controversy or the burden on  
22 the staff to identify these things where perhaps the  
23 licensee has thrown things into one box and it's not  
24 at all obvious it should be there.

25 MEMBER SIEBER: I think what's really

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1 important is not where you start off in your  
2 classification scheme, it's where you end up. And  
3 whether you call everything green and then convert  
4 some stuff to orange, or you start off with a set of  
5 rules that say these things are green, these things  
6 are orange and then you're required to analyze all the  
7 orange stuff to see how you're going to meet the  
8 protection requirements and find out that you can't,  
9 you're going to protect it like it was green. I think  
10 you end up at the same place regardless of how you  
11 start out. And so I don't see this as an intellectual  
12 conflict, nor do I see it as an escape path for  
13 licensees who really don't want to make a lot of  
14 changes to their plant. I think you end up the same  
15 place regardless of your approach.

16 CHAIR BONACA: Let's complete the  
17 presentation. I think we should proceed with the  
18 presentation and then at the end we'll have additional  
19 comments if there are.

20 MR. FRUMKIN: Okay. The second technical  
21 issue that was a change from this version the document  
22 was regarding the concurrent hot shorts and separate  
23 cables for components for important safe shutdown.  
24 And based on the comments from the committee, we  
25 wordsmithed this a little bit to make it a little bit

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1 more clear. We added some discussion of defense-in-  
2 depth and provided some examples such as automatic  
3 suppression and limits on ignition sources. So to  
4 provide what we believe is sufficient guidance to the  
5 licensees or to understand what we mean. So that's a  
6 change that we made to this slide, or to the guide, to  
7 incorporate ACRS comments. And that takes us to our  
8 last slide which is our closing slide which is that  
9 we're requesting committee endorsement of the guide as  
10 it's currently concurred upon. To emphasize that this  
11 is a Commission priority that requires the staff to  
12 issue this guidance in order to, as Jack said, to  
13 start enforcement - to eliminate the enforcement  
14 guidance. I'll say also that this green box/orange  
15 box approach has been submitted to the Commission as  
16 part of a Commission paper. They didn't have comments  
17 on it. It wasn't sent to them for their approval, but  
18 they didn't have comments on it so they were cognizant  
19 of it.

20 MEMBER APOSTOLAKIS: So this is a  
21 regulatory guide that tells the industry how to  
22 implement Appendix R, is it?

23 MR. FRUMKIN: Yes.

24 MEMBER APOSTOLAKIS: And Appendix R was  
25 issued when?

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1 MR. FRUMKIN: 1981.

2 MEMBER SIEBER: `81.

3 MEMBER APOSTOLAKIS: Why does it take 28  
4 years to do this?

5 MR. FRUMKIN: Well, as Sunil said there  
6 wasn't - we were providing our regulatory guidance  
7 through generic letters and communications with the  
8 licensees which was not very efficient. So back in  
9 about 2000 we developed this regulatory guide to pull  
10 all this information together. At that time the NRC  
11 wasn't - was listening to the licensees regarding the  
12 issue of multiple spurious. So the door was still  
13 open for the licensees to prove to the staff that  
14 multiple spurious was not a credible phenomenon. That  
15 didn't occur so we have been working for the last  
16 eight years or so to pull all the pieces together to  
17 come up with a solution for multiple spurious.

18 MEMBER SIEBER: The major issue there is  
19 that issue of enforcement. It's hard to enforce a  
20 generic letter on licensees. It does not represent a  
21 regulatory provision or the rule.

22 MEMBER APOSTOLAKIS: This is not one of  
23 the -

24 MEMBER SIEBER: Well, the chart does not  
25 apply to all plants as I understand it. Some of the

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1 early plants - if you read Appendix R, it's plants  
2 after such and such, right?

3 MR. FRUMKIN: Yes, Appendix R III.G  
4 applies to plants licensed before January 1, 1979.

5 MEMBER SIEBER: Right.

6 MR. FRUMKIN: And the other plants were -  
7 have licensing basis which is based on the same  
8 language if enforced isn't under a rule, it's under  
9 their license.

10 MEMBER APOSTOLAKIS: This is not one of  
11 our finest hours.

12 MEMBER SIEBER: This is a good hour for  
13 us.

14 MR. FRUMKIN: Yes, and the Commission has  
15 actually asked that the staff develop a historical  
16 lessons learned document. We're currently developing  
17 that.

18 MEMBER STETKAR: Dan, can I ask you a  
19 question? The change from the last meeting we had was  
20 formalizing the requirements for evaluating two cables  
21 or three cables or I guess all cables depending on the  
22 function or the level of protection. What kind of  
23 feedback from the industry have you had on that  
24 particular issue? I know there's been a lot of  
25 discussion. Are they reasonably accepting of the

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1 current situation?

2 MR. FRUMKIN: Yes. The timeline - not to  
3 take too much time - is the NEI proposed a single  
4 cable. The NRC blanketly did not endorse that in our  
5 draft guide that came in front of ACRS. They were  
6 notified. They came in with a proposal for two cables  
7 and limitations on the number of conductors. The NRC  
8 through just conversations with the NEI countered with  
9 two cables but the science doesn't support a  
10 limitation on conductors and also putting in defense-  
11 in-depth. And we have representatives from NEI but I  
12 believe that they are very satisfied with this. It's  
13 more important that there's a line to show where the  
14 analysis needs to occur than where exactly the line  
15 is. So it's not exactly where they want it, but it's  
16 something that they can work with.

17 MEMBER SIEBER: Now, you remember at the  
18 September meeting, the words were not in the reg guide  
19 that reflected the position that we've discussed today  
20 and the words in NEI 00-01 did not reflect that  
21 position. However, the staff and NEI had reached an  
22 agreement and the discussion at that point in time was  
23 would NEI 00-01 be amended and this reg guide endorse  
24 it, and the decision was made not to do that process  
25 because of the administrative complication as opposed

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1 to the technical differences that may exist. So NEI  
2 has a modification in hand and I don't know if they've  
3 modified 00-01 yet. But the staff elected to put it  
4 directly in the guide and not reference NEI 00-01 for  
5 this information. But either by now or sometime in  
6 the near future they should be consistent.

7 MR. FRUMKIN: Right, and it's the NEI's  
8 intent based on our discussions with them that they  
9 will return this information into their Revision 3 of  
10 the document at which time we, when we do our next  
11 revision of the reg guide, these inconsistencies can  
12 be resolved and we can slim down the reg guide and  
13 rely more on the industry implemented guides.

14 MEMBER SIEBER: Okay, is there any further  
15 questions? If not, I would like to thank the staff.  
16 I think my idea of putting the one slide with the  
17 green and the orange boxes to stimulate conversation  
18 was effective. Presuming a proper outcome, I have  
19 prepared a draft letter to be considered by the full  
20 committee later. And I would like to thank the staff  
21 for your patience and your hard work and I thank the  
22 members for their participation. And I'd like to turn  
23 it back to you, Mr. Chairman.

24 CHAIR BONACA: Are there any comments from  
25 the agency?

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1 MEMBER SIEBER: Are there comments from  
2 any of the participants?

3 MEMBER APOSTOLAKIS: Only if you want to.

4 MR. HUTCHINS: Just - Steve Hutchins, NEI.  
5 I'm a loanee from Exelon so I can also speak for  
6 utilities. So we didn't want the industry to be  
7 confused. We believe with 00-01 Rev 2 and the reg  
8 guide there will be information and we plan now to  
9 issue a Rev 3 basically with the ACRS comments and so  
10 forth incorporated, telling the industry that indeed  
11 we accept Rev 2 of the reg guide and put the words,  
12 the new words into 00-01 Rev 3. So you can either  
13 pick up Rev 3 or Rev 2 with the reg guide. So there  
14 won't be any confusion. And just another comment on  
15 the categorization I guess. Once the utility does the  
16 green box/orange box categorization, we're still  
17 obligated to do the firm hydraulics, the  
18 feasibility/reliability study, the fire modeling. If  
19 that does not work then the guide tells us to go and  
20 protect it per III.G.2. So we don't just stop there,  
21 we do a full protection if those other tools available  
22 to us don't seem to work.

23 CHAIR BONACA: Thank you.

24 MEMBER APOSTOLAKIS: Good.

25 MEMBER SIEBER: I think that concludes the

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1 presentation and I turn it back to you, Mr. Chairman.

2 CHAIR BONACA: Thank you. Next item on  
3 the agenda is a break, but it's kind of early. Well,  
4 I have to see if I can fit something between 9:00 and  
5 9:45. I don't think so. So let's take a break.

6 (Whereupon, the foregoing matter went off  
7 the record at 9:32 a.m. and went back on the record at  
8 9:58 a.m.)

9 CHAIR BONACA: Let's get back into  
10 session. We have now a 1-hour presentation on the 10  
11 C.F.R. Part 52 regulatory process. And Dr. Bley is  
12 going to take us through the presentation.

13 MEMBER BLEY: Thank you, Mr. Chairman. We  
14 don't hear about the Part 52 process which we always  
15 like to get reinforced on, but a couple of words about  
16 history. From the beginning of Part 52 ITAAC the  
17 committee has written several letters, always having  
18 some question about how this whole process is going to  
19 fit together. In July of this year we wrote a letter  
20 on Reg Guide 1.215 on ITAAC closure mostly supporting  
21 that reg guide, but raising a few questions on DAC.  
22 EDO responded to us with some commitments on how the  
23 process is expected to go forward and we appreciate  
24 that. I guess between those two times we had a little  
25 informal meeting with Gary Holohan and some members of

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1 the NRO management on how this all is coming together.

2 And on the 22<sup>nd</sup> of September there was a Commission  
3 meeting on ITAAC and a fairly interesting exchange at  
4 the end during the commissioners' question and answer  
5 session. So mostly what we're going to have is an  
6 overview of the process, but I think we'll begin with  
7 Frank Akstulewicz giving us a little outline of how  
8 this is set up. And I know it's a topic that could  
9 expand, but we only have an hour so we will be held to  
10 that. Frank?

11 MR. AKSTULEWICZ: Thank you. What I'd  
12 like to do is kind of set the tone for why we're here  
13 and what we'd like to go through today. First of all,  
14 Gary sends his regrets. He's out of the country in  
15 the Orient at the moment at a meeting and Michael has  
16 other obligations. He would have liked to be here and  
17 provide some introductory remarks. The discussion for  
18 why we're here. I've had the opportunity to sit in on  
19 some of the deliberations that the committee has had  
20 as part of the subcommittees on some of the different  
21 design centers and some of the challenges that the  
22 subcommittees have struggled with with respect to  
23 process issues or with respect to licensing under Part  
24 52. And we thought it would be a really good idea to  
25 kind of go through kind of an overview of what the

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1 rule is to refresh everybody's understanding and to  
2 provide some additional understanding for maybe some  
3 of the newer members if they have questions, and then  
4 to open it up literally to questions or concerns that  
5 the members have to try to answer those questions as  
6 best we can with the hope that we'll alleviate some of  
7 the concerns that some of the members have with  
8 respect to the process moving forward and the overall  
9 licensing under the Part 52 regulation. We're going  
10 to - Jerry is going to walk through the rule in  
11 simplicity. We have members of the staff here. We  
12 have several directors and deputies that are present  
13 that are available to answer questions specifically in  
14 the areas that we oversee and so we would be happy to  
15 try to address concerns that the members have at that  
16 time. So Jerry, if you're ready, unless the committee  
17 has some questions.

18 MEMBER APOSTOLAKIS: Yes, it does. So  
19 there are no action items, it's just a briefing?

20 MR. AKSTULEWICZ: That's correct. There  
21 are no actions on this particular portion of today's  
22 agenda.

23 MEMBER BLEY: Well, maybe before Jerry  
24 begins I'd mention to the staff. We had a pretty  
25 interesting subcommittee meeting earlier this week on

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1 AP1000, the new certification, and I don't usually  
2 recommend anybody trying to read our transcripts, but  
3 the transcript of that meeting has some very  
4 interesting discussions about when AP1000 was  
5 certified it had a set of DAC - and now closing the  
6 DAC through a more thorough review process, and how  
7 those things align might be a very useful exercise to  
8 understand how all this would work together when those  
9 in another case get resolved at the COL rather than at  
10 this point in time. But Jerry, why don't you go  
11 ahead.

12 MR. WILSON: Thank you. Let me first say  
13 that I have copies of my handout in the back of the  
14 room for the benefit of the audience. If you look at  
15 the last page of the handout there are some  
16 definitions that the audience might find useful as we  
17 have this discussion. I am going to try and get to  
18 Mr. Bley's question here in a moment. First of all, I  
19 think it's helpful when we talk about licensing  
20 process that we consider what does it take for an  
21 applicant to get a license to build and operate a  
22 nuclear power plant and at a high level this is the  
23 list, this is the complete list. An interesting point  
24 on this list is that when I started licensing nuclear  
25 power plants back in the 1970s it was the same list.

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1 So in that regard you could say that nothing has  
2 changed from the substantive standpoint, but many  
3 things have changed from the procedural standpoint in  
4 how applicants choose to go through the licensing  
5 process. And that's what I'm going to talk about  
6 today and I plan to hit some successes and challenges  
7 as that process has been unfolding. So when we have  
8 created Part 52 back in the late 1980s we created  
9 three new processes, combined license, design  
10 certification and early site permits, and we've  
11 combined them with the existing processes that are now  
12 set forth in various subparts of Part 52.

13 Now the point to keep in mind as we talk  
14 about this are our goals with the new licensing  
15 process. The key one of course is to resolve all  
16 safety and environmental issues before we start  
17 construction and we believe that'll provide a more  
18 predictable licensing process and reduce the financial  
19 risk to companies who are building those plants. Also  
20 we believe this process provides for a more timely and  
21 meaningful public participation, and of course the  
22 Commission is encouraging the use of standardization.  
23 Go ahead.

24 MEMBER APOSTOLAKIS: Just a minor thing,  
25 but COL, does it stand for construction and operating

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1 license or combined license?

2 MR. WILSON: The proper shorthand phrase  
3 is combined license. The official term, and by the  
4 way for members of the audience, this is set forth in  
5 Section 52.1 which is definitions for Part 52. It's a  
6 combined construction permit and operating license  
7 with conditions, but our official shorthand is  
8 combined license.

9 MEMBER APOSTOLAKIS: But it's an acronym?

10 MR. WILSON: Yes, it's an acronym.

11 MEMBER APOSTOLAKIS: Construction  
12 Operating License.

13 MR. WILSON: No.

14 MEMBER APOSTOLAKIS: No.

15 MR. WILSON: The rule - speaking as  
16 someone who has worked in Washington for a lifetime,  
17 the rule of acronyms doesn't require a separate word  
18 for each letter.

19 (Laughter)

20 MEMBER APOSTOLAKIS: So it's combined  
21 license.

22 MR. WILSON: That's a benefit of 37 years  
23 in federal government.

24 MEMBER APOSTOLAKIS: Okay, good. I'm glad  
25 I asked.

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1 MR. WILSON: I'm glad you asked that.

2 MEMBER APOSTOLAKIS: Did you know that?

3 MEMBER RYAN: No sir, I did not, I must  
4 admit.

5 MEMBER APOSTOLAKIS: Especially that there  
6 is a rule that says every letter has to have a word.

7 MR. WILSON: For the benefit of some  
8 people here who may be a commissioner in the future  
9 I'll just point out that some commissioners have made  
10 that error in their speeches and I tend to monitor  
11 that process.

12 MEMBER APOSTOLAKIS: Experience of 37  
13 years allows him to say that.

14 (Laughter)

15 MR. WILSON: So anyway, this diagram shows  
16 a visual layout of the process. An important point  
17 here is that each of these licensing processes on the  
18 left-hand column here are options and applicant, to  
19 get a license to build and operate a plant doesn't  
20 have to adopt any of them or can reference some of  
21 them. You couldn't come in with an application that  
22 has all of the information you need as was shown in  
23 Slide No. 2. So that's an important point. Now, once  
24 you get that license this is an authorization to begin  
25 construction, either an LWA or a combined license will

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1 give you that authorization. Once that begins then  
2 our construction inspection program takes over and the  
3 staff is verifying that the plant is being built in  
4 accordance with approved design and under Part 52 we  
5 use the ITAAC process for that. And just a reminder  
6 that in substance it's no different than when we  
7 verified plants in the past under the construction  
8 inspection program. The difference is that industry  
9 requested and the NRC agreed that we would work out in  
10 advance what those inspection tests and/or analyses  
11 would consist of and what the acceptance criteria  
12 would be. And that is what brings additional  
13 predictability to the process.

14 VICE CHAIR ABDEL-KHALIK: What is the  
15 legal definition of the word "construction?" Does it  
16 also include site preparation?

17 MR. WILSON: No. Let me speak to that.  
18 We recently revised our regulations in 50.10 under the  
19 LWA rulemaking and the key change in that was changing  
20 the definition of construction. And in there we  
21 specify in 50.10(a) those activities that constitute  
22 "construction" from a legal perspective and those  
23 things that are what we call "pre-construction." So  
24 the difference being you can do those activities such  
25 as site preparation, and let me define that as cutting

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1 down trees, putting in roads, making lay-down areas,  
2 putting in shop facilities, warehouses. All those  
3 types of activities do not require approval from the  
4 NRC. We define those as pre-construction and you can  
5 do that without a license. Anything that constitutes  
6 construction which we define in the regulations does  
7 require a license and if you initiate construction as  
8 defined in 50.10(a) without a license then you would  
9 be in violation of the Atomic Energy Act.

10 MEMBER BLEY: Just for the committee, this  
11 afternoon one of the items we have the option to look  
12 at - it comes up in the PNP - is the initial staff  
13 guidance in this area which lays out all this in great  
14 detail. So you can see that and we can decide if we  
15 want to actually dig into that some, but it is coming  
16 up this afternoon. And we have the document.

17 MR. WILSON: And a fine point on that.  
18 Not everything that the Commission has put in the  
19 category of pre-construction is outside of our  
20 regulatory jurisdiction. So an example of that is  
21 long-lead procurement. We've always allowed  
22 applicants to procure certain equipment such as  
23 reactor pressure vessels which clearly fall within our  
24 regulatory jurisdiction, but to facilitate the process  
25 you can do that without a license and that's

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1 identified in the category of activities that we refer  
2 to.

3 MEMBER ARMIJO: Jerry, on this chart,  
4 where does fuel load happen? Is that before or after  
5 Nuclear Operation Decision? I guess I'd like to get  
6 more on that.

7 MR. WILSON: The staff defines "operation"  
8 as authorization to load fuel. So the way it  
9 officially works is in 52.103(g), once the applicant  
10 has completed construction and sent in their closure  
11 letters for all the ITAAC and the committee's heard  
12 about this in previous presentations, the Commission  
13 makes a finding that all ITAAC are met and with that  
14 finding the licensee is authorized to load fuel. So  
15 that's the beginning of operations from the staff's  
16 perspective. Okay? Any questions on that?

17 Early site permits. This is one of the  
18 processes that we created under Part 52. It was  
19 created for the situation where a company didn't have  
20 near-term plans to build a plant, but they knew that  
21 if and when they decided to build the plant they knew  
22 where they wanted to put it, had a desire to get those  
23 siting issues resolved, and that's the purpose of the  
24 early site permit process. So preapproval of your  
25 site, so-called banking a site. Now, in that review

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1 we review site safety issues. So that's where we  
2 determine the safe shutdown earthquake, the design  
3 basis flood, other characteristics like that. Also,  
4 the disclosure of the impacts of both construction and  
5 operation are done at that time. And finally, the  
6 applicant needs to demonstrate that that site is  
7 feasible for developing an acceptable emergency plan.

8 Now in this part of the regulations we have an  
9 option. An applicant could either demonstrate that  
10 it's feasible to come up with an acceptable emergency  
11 plan and there are certain actions they need to do to  
12 do that, or they could come in with a complete plan  
13 and get the whole emergency planning resolved at the  
14 early site permit stage. So there's options there.

15 MEMBER APOSTOLAKIS: So the emergency plan  
16 is independent of what kind of reactor they want to  
17 put there?

18 MR. WILSON: In general, yes. An  
19 exception to that is the emergency planning provisions  
20 do allow for certain types of plants and I'm going to  
21 take as an example a very low-power gas-cooled reactor  
22 may be able to justify emergency planning zone. It's  
23 not the normal size. But in general those  
24 requirements on emergency planning capabilities in the  
25 zone and stuff would be the same regardless of the

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1 design.

2 MEMBER APOSTOLAKIS: The industry does not  
3 object to that?

4 MR. WILSON: Not that I'm aware of. I  
5 think that this question will come up when we get into  
6 the review of some of these more advanced designs,  
7 more advanced than we're reviewing at this point in  
8 time. Now, how's the process been working? Well, the  
9 good news is we issued four early site permits and  
10 three of them have been referenced in the combined  
11 license applications that we're currently reviewing.  
12 The challenge has been the applicant's use of what's  
13 referred to as a plant parameter envelope. I believe  
14 the committee's familiar with this. This is where the  
15 applicant wants to be able to choose from a wide  
16 variety of designs and so they have used design  
17 characteristics and they've enveloped them to specify  
18 the types of characteristics that were evaluated in  
19 that early site permit. The difficulty with that is  
20 that makes the staff's review more challenging and a  
21 consequence of that is there's less finality with the  
22 early site permit. So when a combined license  
23 applicant comes in and references that permit that  
24 used the plant parameter envelope, they now have to  
25 demonstrate that the actual design that they have

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1 selected falls within that envelope. So there's a  
2 little less predictability in the process for  
3 applicants to choose that. But on the other hand,  
4 they have gained more flexibility. The industry  
5 understands that tradeoff and you'll see most of the  
6 applicants are using that approach. The exception was  
7 the Vogtle applicant. Vogtle specified that they were  
8 going to use AP1000 and so the staff was able to focus  
9 review on that. It was an easier review from the  
10 staff's perspective. Okay, so any questions on early  
11 site permits?

12 Let's get to one of our more popular  
13 options is design certification. In this process  
14 we're trying to get preapproval of the design issues.

15 The Commission encouraged standardization with this  
16 and also provided more finality with design  
17 certification. And by that I mean that once a design  
18 is certified through a rulemaking, making changes in  
19 the design is more difficult. That was the original  
20 goal of design certification. And you'll see that so  
21 far all of the applicants have been referencing  
22 standard design certifications.

23 Now, how has it been working out? I'll  
24 say that speaking as a creator of this process not as  
25 well as I had hoped, but the good news is prior to

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1 receipt of those combined license applications we had  
2 four design certified. Goal of the industry was we'd  
3 like to have those designs pre-approved on the shelf  
4 for us to select them. However, it turns out only one  
5 applicant referenced the certified design. So it  
6 hasn't worked out quite as well as we anticipated.  
7 Other challenges we've had during the review. One  
8 that you've mentioned is so far all of the  
9 applications for design certification have been  
10 incomplete. By that I mean certain design areas  
11 weren't described in the application and they  
12 requested to use the design acceptance criteria in  
13 lieu of those detailed design information in areas  
14 such as the digital I&C and human factors. So that's  
15 been a challenge for the staff in working up  
16 acceptable acceptance criteria for evaluating and  
17 verifying that that design work is completed.

18 VICE CHAIR ABDEL-KHALIK: Now, what is the  
19 logic for setting a 15-year limit on the  
20 certification?

21 MR. WILSON: That's a very  
22 humorous story. During the time that we were  
23 developing Part 52 - and I'm talking about 1988 was  
24 the key year for formulating these matters - the  
25 industry proposed that designs be certified for a 10-

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1 year period. Our experience prior to that in the  
2 design approval process was that we had done design  
3 approvals for a 5-year period. When we looked at that  
4 and heard that recommendation, we looked back and at  
5 that point in time - you've got to put yourself in the  
6 late 1980s - regulations seemed to be fairly stable.  
7 We felt that we could live with this 10-year period of  
8 the design being available for referencing. And so at  
9 the Commission meeting where I was up at the front  
10 table meeting with the Commission, I'm explaining to  
11 someone what I'm telling you is why we believe that 10  
12 years was an acceptable time period for the duration  
13 of design certification. While I'm having this  
14 discussion there's a voice in the audience behind me  
15 and someone said how about 15 years. And if you read  
16 the transcript like Dennis likes to do you'll see that  
17 it says, "How about 15 years?" and then there's  
18 laughter in the room. Well, subsequent to that the  
19 SRM came out and the SRM told me to change 10 to 15  
20 and the rest is history.

21 VICE CHAIR ABDEL-KHALIK: But the logic  
22 though.

23 (Laughter)

24 VICE CHAIR ABDEL-KHALIK: Why not forever?  
25 I mean, that's the basis for my question.

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1 MR. WILSON: Right. And that gets into  
2 how long can you keep that ability to reference the  
3 design given regulations change. Remember, we have  
4 finality restrictions on it so if you reference that  
5 design and that was approved, unless there was a  
6 backfit imposed they only have to meet what the design  
7 certification says. They wouldn't necessarily have to  
8 meet new requirements and new guidance. So how long  
9 can the agency live with that while operating  
10 experience is going on and the regulations are going  
11 on and designs are changing? And so that's really the  
12 issue is how long can we as a regulator live with the  
13 regulations that we use to approve those designs.

14 VICE CHAIR ABDEL-KHALIK: Now, and the 15  
15 years pertains to the time at the point at which the  
16 COL application was filed, or at the point when the  
17 COL application is approved?

18 MR. WILSON: Filed.

19 VICE CHAIR ABDEL-KHALIK: The final.

20 MR. WILSON: The filed.

21 VICE CHAIR ABDEL-KHALIK: Filed, sorry.

22 MR. WILSON: You submit your application  
23 so there's in effect a time window. Once the design  
24 is certified, the window opens up for 15 years. In  
25 that time period, you can reference that design. If

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1 it gets to the expiration of that 15-year period you  
2 can no longer reference that design. But if you have  
3 referenced it during that time period, that version of  
4 the design stays with that licensee for the life of  
5 their plan.

6 MEMBER RYAN: What does the "plus renewal"  
7 part mean?

8 MR. WILSON: We have a process for  
9 renewing a design certification. So, and that's  
10 interesting. We're actually coming towards the end of  
11 the time period for the first two plants that were  
12 certified and we've received notifications that we're  
13 going to get a request to renew the ABWR design.

14 MEMBER ARMIJO: Jerry, we're working on  
15 some plants where there are a lot of changes from the  
16 certified design and the question I had is was there  
17 ever a discussion or thinking about how many changes  
18 are too many where you basically should look at it  
19 entirely as a new design?

20 MR. WILSON: Let me answer that two ways.  
21 Number one, let's take the perspective of a combined  
22 license applicant coming in and referencing a  
23 certified design. We'll use South Texas as my  
24 example. They have taken some departures from that  
25 design. We have no criteria as to how many is too

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1 many. The benefit to the applicant is they'd like to  
2 stay with the certified design because those issues  
3 are pre-approved and resolved. You start taking  
4 departures, now you're opening up the process  
5 potentially. That's the tradeoff. Ideally the  
6 Commission would like standardization and as each COL  
7 applicant takes departures that's a little less  
8 standardization. But we have no requirement -

9 MEMBER ARMIJO: It's not numbers, but it's  
10 the substance.

11 MR. WILSON: But basically they could do a  
12 lot and we'd just have to review it, but it extends  
13 out their review potentially. Now, the other  
14 situation though is renewal of the design  
15 certification which we just talked about. Under the  
16 renewal process you can also amend your application.  
17 So you could make some changes in addition to asking  
18 for a renewal. We do have a threshold there you'll  
19 see in the regulations, I believe it's 52.57 where we  
20 say okay, if those amendments get to be too much then  
21 you're in effect asking for a whole new certification.

22 We would just say no, you've got to start over from  
23 the beginning. And an experience with that is what  
24 happened in AP600 where they in effect did a power  
25 uprate but we required a whole new certification for

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1 AP1000, whereas now we're doing an amendment of AP1000  
2 we haven't hit that threshold. We're just amending  
3 the existing AP1000. So that's kind of two different  
4 examples of that situation. Okay?

5 MEMBER BLEY: When you amend - when we get  
6 to approve the amendment to AP1000, will that start  
7 another 15-year time clock?

8 MR. WILSON: No. Thank you for that  
9 question. If you're just seeking an amendment of an  
10 existing certification, the time period does not  
11 change. So their end date for the effectiveness of  
12 AP1000 is going to remain the same despite the fact  
13 they amended the design. If they wanted to reset the  
14 time period they'd have to come in with a renewal.  
15 That's when we would reset the time period.

16 Combined licenses. This is the  
17 fundamental process under Part 52. So far we've done  
18 well. We've received a lot of applications and when  
19 we first came out with Part 52 there was a little bit  
20 of uncertainty as to whether or not the industry would  
21 adopt this process, but I'd say it has worked out. As  
22 you stated before you could come in with a complete  
23 application as part of your combined license  
24 application, or you could incorporate by reference  
25 previous early site permits or previous design

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1 certifications, and also you can request to  
2 incorporate the design that's under review although we  
3 had no previous idea as to how that would work. And  
4 so you'll see if you look at that in the regulations  
5 what we say is if you're doing that, you're doing that  
6 on your own risk. We don't guarantee that that's  
7 going to work out.

8 So looking at how well this has gone, the  
9 good news is we've got 17 applications for combined  
10 licenses. Our successes, we've adopted this design  
11 center review approach. The committee has seen this  
12 on AP1000 and EPR. The focus is on the referenced  
13 combined license application. We want to do the  
14 reviews there and encourage the subsequent combined  
15 license applicants to align with the reference  
16 applications so that we have one review that applies  
17 to all of those designs. And that appears to be  
18 working well in AP1000 and EPR. Our challenge has  
19 been, and this gets back to what we were talking about  
20 earlier, only one of the combined license applicants  
21 has referenced a certified design, and so as a result  
22 we have multiple applications where both the combined  
23 license review and design certification review are  
24 going on in parallel. That's a challenge for the  
25 staff and for the committee. And so that's what we're

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1 working through now.

2 MEMBER APOSTOLAKIS: Jerry, what - how do  
3 you define R-COL?

4 MR. WILSON: A reference. So -

5 MEMBER APOSTOLAKIS: So some - please.

6 MR. WILSON: The licensees in interaction  
7 with the staff have determined which of the applicants  
8 is going to be in effect the lead applicant, or what  
9 we call the reference applicant. At the moment  
10 looking to Frank I think we've officially switched  
11 over so Vogtle is the reference applicant for AP1000.

12 MEMBER APOSTOLAKIS: So it's one of the  
13 COLs that is among the first ones. And by your  
14 agreement this will serve as the reference.

15 MR. WILSON: Right. And the other COL  
16 applicants that are working together - we encourage  
17 that - are working together and they are aligning  
18 themselves so that in the reference application it  
19 says in those areas that are outside the scope of  
20 design certification who are doing X, Y and Z, and  
21 subsequent COLs are adopting the same positions on all  
22 of those issues.

23 MEMBER APOSTOLAKIS: But what if - I mean,  
24 if you didn't have the concept of the reference COL  
25 and Vogtle is the first one, then somebody else comes

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1 in and follows more or less the Vogtle COL because it  
2 has been reviewed. If that is that it would be like  
3 using a reference COL, right?

4 MR. WILSON: Right. It wouldn't have  
5 quite the formality, but yes, in substance.

6 MEMBER APOSTOLAKIS: There are apparently  
7 people who actually do this.

8 MR. WILSON: Right.

9 MEMBER APOSTOLAKIS: And then the S-COL,  
10 is that different?

11 MR. WILSON: These are the other combined  
12 license applications that are aligning themselves with  
13 the reference COL.

14 MEMBER APOSTOLAKIS: Okay.

15 MR. WILSON: What we call the subsequent  
16 COLs.

17 MEMBER APOSTOLAKIS: The third guy would  
18 be an S-COL.

19 MR. WILSON: Yes. So in the case of  
20 AP1000, Summer is not the reference plant, but they  
21 are following along with what Vogtle is doing.

22 MEMBER RAY: Can I give some input here on  
23 the third comment that you've made? You comment a  
24 number of times about the PPE being problematic from  
25 the staff's standpoint. The Plant Parameter Envelope.

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1 Let me give you a different perspective on that,  
2 because your position was a problem for me not so long  
3 ago when I was in the industry. If you're trying to  
4 get an ESP, you're dealing not mostly with the NRC.  
5 You're mostly dealing with a world of other agencies  
6 out there. And I think the NRC tends to forget that.

7 They think they're the top dog all the time, but  
8 that's not the case.

9 MR. WILSON: We think we are.

10 MEMBER RAY: You think you are, but you're  
11 not. You're not where the money comes from, for  
12 example, and so on. And it is a lot easier to deal  
13 with other agencies if - I'll just assert this,  
14 question it or not as you see fit - it is a lot easier  
15 to deal with other agencies in this world if you're  
16 using a plant parameter envelope for an ESP than if  
17 you picked a plant. And that's the reason why I think  
18 you guys should be accommodating to those who find  
19 themselves in a position where that's the choice that  
20 they made. Because I had to deal with a lot of  
21 industry-wise people telling my management at the time  
22 why this was a bad idea because the NRC didn't like it  
23 and yada, yada, yada. And it drug the whole process  
24 out as we debated this issue to the detriment, I  
25 think, of the ultimate goal. Because people were not

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1 prepared to - they were prepared to go forward with  
2 the ESP, but not with a designated plant selected.  
3 And so that debate became - it took a year and a half,  
4 and by that time we had missed a window of  
5 opportunity. I'm from California. And by the way,  
6 don't let anybody tell you that California law  
7 prohibits an ESP, because it doesn't. But that's a  
8 reason that I think you ought to keep in mind. There  
9 are people who can move ahead with a PPE who cannot if  
10 you've got to first designate a plant design.

11 MEMBER APOSTOLAKIS: Why? Why is that?

12 MEMBER RAY: Well, because once you  
13 designate the plant design it raises - now you've got  
14 another party involved in the process. The vendor of  
15 the plant design. But more importantly than that you  
16 have now introduced not a site approval for some plant  
17 yet to be decided, but you have a site and a plant,  
18 and it simply creates an enormously higher amount of  
19 controversy. Why this plant, how much is it going to  
20 cost, do you have the contract, it goes on and on and  
21 on. And if you can present a site as a site for a  
22 plant that fits in this envelope, but we're not  
23 telling you that we've picked a vendor, we don't need  
24 to get the vendor involved in this debate, we need to  
25 deal with the political issues having to do with water

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1 and transmission access and site location and God  
2 knows what. First, it simply makes the job practical,  
3 whereas in some places it becomes much more difficult  
4 if you've also got to deal with the specific issues of  
5 the plant design. So that's for whatever it's worth.

6 MR. WILSON: I accept that and it allows  
7 me an opportunity to clarify. It's not like we're  
8 opposed to it. We have accommodated plant parameter  
9 envelopes.

10 MEMBER RAY: I know you have. And I -

11 MR. WILSON: - we've adopted our  
12 procedures to review it, but I just want to point out  
13 the difficulties that that brings with it.

14 MEMBER RAY: I know, but because  
15 commissioners would stand up in meetings and opine  
16 about how - one commissioner in particular - why a PPE  
17 was problematic, like I say, in this one case it  
18 stalled us for about a year and a half. It was - as  
19 you say, you've done it and I could show they did it.  
20 And so that overcame the roadblock, but then there  
21 were other roadblocks that appeared.

22 MEMBER APOSTOLAKIS: So the less specific  
23 you are the better off you are.

24 MEMBER RAY: In some venues. All I'm  
25 saying is if you sit back on the industry side and

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1 view the world that you've got to deal with to put one  
2 of these plants out there, the NRC is a small sliver  
3 of the issue. Most of the issues deal with other  
4 agencies, other constituencies and so on.

5 MEMBER CORRADINI: If they're in  
6 California.

7 MEMBER RAY: Well, it's not just in  
8 California. Everybody says oh well, forget  
9 California, they're crazy. It's not just in  
10 California.

11 MEMBER CORRADINI: I can tell you the  
12 crazy states.

13 MEMBER RAY: The same thing is true in  
14 Arizona. I mean, I can go right down the list. I  
15 happen to know something about Arizona. And I'm only  
16 appealing to not keep harping on this issue. I'll be  
17 pejorative. That oh, we see a PPE as being  
18 problematic because then that undermines people that  
19 are trying to get sites approved without having to  
20 pick a reactor. That's my spiel.

21 MR. WILSON: One further point. You've  
22 got a point that I think people miss. What the  
23 regulations ask an applicant to do is specify a type  
24 of plant. When I say type of plant, I mean  
25 pressurized water reactor, boiling water reactor, gas-

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1 cooled reactor. So what we've had now is both  
2 extremes. We've had Vogtle's come in and picked a  
3 particular design that's more narrow than the  
4 regulations required and then we've had PPEs which is  
5 broader. So we're working with the extremes right  
6 now. It'll be interesting to see if we ever get one  
7 that goes after what we envisioned when we created the  
8 process.

9 MEMBER RAY: I'm just saying be sensitive  
10 to this issue.

11 MR. WILSON: Thank you. Anything further  
12 on combined licenses? I'll take a moment to talk  
13 about limited work authorizations. This is a process  
14 where you can get approval, an advance combined  
15 license, to perform certain activities. And in order  
16 to do that you have to do a review of the safety  
17 activities, you have to disclose the environmental  
18 impacts, you have to propose a redress plan and you  
19 need a separate hearing getting approval of those  
20 activities before you begin construction. Now,  
21 interesting thing about this, and this came up  
22 earlier, is that we recently revised the limited work  
23 authorization process. We redefined construction, and  
24 the Commission's goal in that is that we would  
25 minimize the number of limited work authorizations.

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1 Now that there are more site preparation activities  
2 that applicants can do without an approval of the NRC  
3 we anticipated we would get fewer requests than we did  
4 in the past, and so far it's looking like that's going  
5 to be the case. So in that regard you could see that  
6 as a success, fewer reviews the staff has to do.

7 Now, one other point I'll bring on here  
8 and kind of in the challenge category is the timing of  
9 these requests are important because understand that  
10 if an applicant for a combined license also requests  
11 an LWA we have to look at those activities that  
12 they're requesting approval to perform and how that  
13 fits into the overall review schedule. If it turns  
14 out that they're doing foundation work at a site that  
15 has a lot of site concerns, those site activities are  
16 a pacing item in the combined license review. It  
17 really doesn't make much sense for the staff to launch  
18 off into an LWA review by the time we could have  
19 issued a combined license. So those kinds of  
20 questions come up when we receive those types of  
21 requests and we have to look at that. Ideally an  
22 applicant would submit a request for an LWA prior to  
23 the submission of their combined license application  
24 that could allow us to start that review, those  
25 selected activities, and get that process authorized.

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1 Before we complete the combined license review they  
2 could start those foundation work activities and keep  
3 their critical path going on schedule in that process.

4 So that's kind of the tradeoff in that process, but  
5 the main point is we expect fewer LWA requests in the  
6 future than we used to get in the past.

7 VICE CHAIR ABDEL-KHALIK: So your concern  
8 is that essentially duplication of effort on your  
9 part?

10 MR. WILSON: I wouldn't say that. It's  
11 just to understand that if someone requests an LWA,  
12 staff has to write an additional safety evaluation  
13 report on those activities, has to issue an additional  
14 environmental impact statement for those activities  
15 and has to go to an additional ACRS meeting, and has  
16 to go to an additional hearing. Those are all  
17 additional work activities.

18 MEMBER CORRADINI: One of them is a joy.

19 MR. WILSON: Pluses with the minuses. So  
20 you have to add all those additional resources onto  
21 the resources you were going to expend for the  
22 combined license and ask yourself does that make sense  
23 to do that in order to facilitate your construction  
24 process.

25 VICE CHAIR ABDEL-KHALIK: Does the scope

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1 of an LWA vary from one applicant to the other?

2 MR. WILSON: Yes, but it's limited to this  
3 list. So you'll see in 52.10 we set forth the types  
4 of activities you can request approval to work on, and  
5 they're basically foundation work, what we perceive as  
6 the typical critical path for someone building a  
7 nuclear power plant. So you can request some of these  
8 activities, but you can't go beyond that. So in plain  
9 language, you could go out to the point of putting in  
10 the base mat, but you couldn't put up the walls of any  
11 of the structures.

12 VICE CHAIR ABDEL-KHALIK: Well, the point  
13 I was trying to make, if the boundary of this scope is  
14 defined where an applicant may ask for a subset of  
15 this, why wouldn't sort of the review of these  
16 activities be a subpart or a component of the COL  
17 review process?

18 MR. WILSON: It would be, but an example I  
19 gave is that sometimes foundation work and more  
20 importantly the acceptability of the ground underneath  
21 the base mat you're putting in can be the critical  
22 path item in the staff's review. So taking time out  
23 to review and authorize an LWA really doesn't make  
24 sense because in the same time period we could have  
25 given you a combined license. That's part of the

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1 tradeoff that Mr. Akstulewicz has to make as he sets  
2 schedules.

3 VICE CHAIR ABDEL-KHALIK: I still don't  
4 understand the logic. Because this is a subset of all  
5 the things that you have to review.

6 MR. WILSON: Yes.

7 VICE CHAIR ABDEL-KHALIK: Regardless of  
8 whether it's critical or not. So if that is the case,  
9 why isn't this a defined -

10 MR. WILSON: The point is there's all  
11 sorts of activities, all sorts of things you review in  
12 a combined license, but only one of them is based on  
13 this review. It's the last thing you get resolved  
14 before you can issue the SER and that drives the rest  
15 of the schedule. So if the LWA activities are  
16 controlled by that pacing item, then - okay? So Dr.  
17 Bley, that's really all I planned to say, except  
18 responding to questions.

19 MEMBER BLEY: Oh, okay. I saw more  
20 slides, I thought -

21 MR. WILSON: Oh, these are just backups.

22 MEMBER CORRADINI: So you don't want to  
23 talk about revisions? I was waiting for revisions.

24 MEMBER BLEY: I have one quick question  
25 before we get to that one. You know, we've - I think

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1 we've all become familiar but maybe not conversant  
2 completely in Tier 1, Tier 2, Tier 2\* and sitting  
3 through the subcommittee on AP1000 certification, the  
4 phrase "design finalization" has come up an awful lot  
5 which is used to show places where specific  
6 requirements and capabilities of equipment has changed  
7 in the final design as people have tests and analysis  
8 to back things up. Was that part of the logic behind  
9 having Tier 2, that it makes it easier to correct  
10 details of design without having to come back and have  
11 a thorough review?

12 MR. WILSON: No. The origin of that two-  
13 tiered rule, and you'll notice that it's not set forth  
14 in a regulation, it's just not how the Commission  
15 envisioned that this process would work, but rather  
16 envisioned that a portion of the design would be  
17 certified. Industry looked at that and said well, you  
18 know we're going through all of that review, we want  
19 to get the finality that comes along with design  
20 certification for our whole FSAR with submittal, and  
21 that was the origin of the two-tiered rule. So Tier 2  
22 is basically the whole application for design  
23 certification, the FSAR. And that's all approved and  
24 in order to make generic changes to that you would  
25 have to go through a rulemaking. So you've gained

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1 that degree of finality with that. And from that we  
2 extracted the high-level features of the design, the  
3 things that make the AP1000, those have become  
4 primarily the design commitments that we verify in  
5 ITAAC. Those are what we call certified and approved.

6 The distinction only comes into play as the - which  
7 of the change processes is used if you want to make -  
8 a COL applicant wants to make a change to it. But the  
9 origin of the two-tiered rule comes from industry's  
10 desire to get the whole thing approved rather than our  
11 original vision which only a portion of it would be  
12 approved.

13 MEMBER ARMIJO: Jerry, there's a  
14 manufacturing license in your key terms. Now, who  
15 holds manufacturing licenses active right now in the  
16 U.S.? Is it still Westinghouse, GE? Does AREVA have  
17 a manufacturing license?

18 MR. WILSON: I want to be clear about  
19 that. We do not require - the NRC does not require a  
20 license to make components for systems. Some  
21 countries like China does require that, but we don't  
22 require that in the United States. In this particular  
23 case a manufacturing license is someone applying for a  
24 license to build and essentially complete a nuclear  
25 power plant. So as an example we have in the past

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1 reviewed an application for a manufacturing license.  
2 That was Offshore Power Systems. They came in to get  
3 a license to build a floating nuclear power plant and  
4 they were going to build that in Jacksonville, Florida  
5 and then float it off to whichever utilities wanted to  
6 have one. So we have done this in the past, but the  
7 important thing to remember is that's for basically a  
8 complete plant. It's not for portions of a plant.

9 MEMBER CORRADINI: So let me investigate  
10 that then. So there's a workshop applying right now  
11 about small modular plants that could be light water  
12 reactor which I assume the staff is more ready than  
13 the other ones that are sitting down there. And in  
14 some of those cases they've identified manufacturers.

15 Does that mean if it's a modular plant of anywhere  
16 from 50 to whatever size these things are that - and  
17 they're modular defined such that something would be  
18 built in some factory setting and then delivered to a  
19 licensee that you'd have to then license that  
20 manufacturer?

21 MR. WILSON: Let me speak to that. First  
22 of all, I'm going to stay away from the word "modular"  
23 because the industry has various definitions for that  
24 word and I find it confusing.

25 MEMBER CORRADINI: So use the definition

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1 that best explains how you guys would -

2 MR. WILSON: I've been approached by some  
3 of those prospective applicants who are not used to  
4 this process and what they're envisioning is a small  
5 reactor where you would build basically the entire  
6 reactor except for some site-specific things in a  
7 manufacturing setting and then a company who wants to  
8 use that would purchase that and they would have to  
9 get approval of the site and the license to operate  
10 it. Now, the important point here - there's two  
11 important points. One, they're seeking approval to  
12 build essentially complete design, number one, and  
13 number two, they're building it in the United States.

14 We do not issue manufacturing licenses to build a  
15 plant in Japan, for example. It's only if they plan  
16 to build it in the United States.

17 MEMBER CORRADINI: Where they use it is  
18 not the point, it's where they build it.

19 MR. WILSON: That's correct. And so they  
20 could - this is a choice. Once again, these are all  
21 options. They could come in and ask for a  
22 manufacturing license to do that. Now that review  
23 consists of a design review which is equivalent to a  
24 design certification review and a review of their  
25 manufacturing process. But it does not contain an

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1 authorization to operate the plant.

2 MEMBER CORRADINI: That would be with the  
3 COL.

4 MR. WILSON: That's - the COL would  
5 reference that manufacturing license. Okay?

6 MEMBER BLEY: Jerry, in last month's  
7 condition meeting on ITAAC there was some discussion  
8 of a new rulemaking on Part 52 and you have a slide on  
9 revisions to Part 52. Maybe you'd talk us through  
10 what kind of things are being anticipated?

11 MR. WILSON: Well, let me first say that  
12 we issued Part 52 in 1989 and then after that we got  
13 into doing design certification reviews and starting  
14 our interactions with prospective applicants on early  
15 site permits and we had some lessons learned from that  
16 and as a result we tried to do an update to Part 52,  
17 and that was completed in 2007 and I talk about some  
18 of the things we did there. The most important and  
19 the biggest one was going back and making sure all of  
20 the regulations that we use in the licensing process -  
21 and let me go back to this slide - all have  
22 appropriate applicability statements. So for example,  
23 prior to this you went back and you looked at a  
24 regulation. In Part 50 it would typically say, well,  
25 if you're applying for a construction permit you need

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1 to do this, if you're applying for an operating  
2 license you need to do that. It wasn't clear as to  
3 what you did if you were applying for a combined  
4 license for a design certification. So we went back  
5 to all of these regulations and made sure they had the  
6 appropriate applicability statements. That was a big  
7 job. So we've done that update. Subsequent to that  
8 update a couple of things have come out. One is that  
9 we discovered some of the things that was in the rule  
10 didn't get - end up in the printed version of the  
11 regulation. We've got some errors and we need to get  
12 that corrected and so my associate Mrs. Gilles over  
13 there, she's keeping a list of all of these things and  
14 we plan to do this cleanup rule to get all that.

15 Back to your point on the ITAAC  
16 presentation. We've had a lot of interaction with the  
17 industry on this issue, maintenance of ITAAC. Once  
18 the ITAAC is complete what happens if something  
19 happens to that particular component or system to the  
20 point that it's no longer in compliance with the  
21 acceptance criteria. We believe at some point we  
22 should get a notification of that. We're in  
23 disagreement with the industry on this point. We  
24 believe there should be a rule change to facilitate  
25 that. The industry thinks that we don't need it at

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1 this time and that's an item that we're planning to  
2 pursue. So that would be a substantive part. Now the  
3 remaining issue that we're trying to decide is do we  
4 do that notification issue as a separate rulemaking,  
5 or do we put it in with all these other cleanup items  
6 and that's what we're working on now. That's kind of  
7 where we stand. Other than items like that where I  
8 don't envision any substantive changes to the Part 52  
9 licensing process, just cleanup stuff.

10 MEMBER BLEY: I just want to point that  
11 out to the rest of the committee. In our letter last  
12 summer and in the EDO's response to it we talked that  
13 the staff is beginning to try to address the process  
14 for formal closure of the DAC. And at the Commission  
15 meeting it was mentioned that a new task group under  
16 Glen Tracy has just been started. Can you tell us a  
17 little bit about what their charter is and what the  
18 schedule is or timeframe is for that?

19 MR. WILSON: I'll start a little bit and  
20 then I'm going to turn over to Mr. Tappert. I remind  
21 the committee that there are three ways of resolving  
22 design acceptance criteria. The first way as you  
23 mentioned earlier on AP1000, the design certification  
24 holder could seek an amendment to resolve some or all  
25 of their design acceptance criteria prior to people

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1 starting construction on that design. The second way  
2 the combined license applicant could get it resolved  
3 prior to them receiving their combined license and  
4 starting construction, they could do it on their  
5 individual application. Those first two methods  
6 really don't require any additional guidance. We know  
7 how to do those reviews and Commission encourages  
8 applicants to use one of those two methods.

9 MEMBER CORRADINI: Can you - I think I  
10 understand the second one, but I'm not sure I  
11 understand the difference between the first and second  
12 one. Can you -

13 MR. WILSON: The first one would be it  
14 would get resolved as part of the design  
15 certification.

16 MEMBER CORRADINI: Oh, so they may  
17 actually have the design?

18 MR. WILSON: Right. The difference is  
19 between a generic resolution and a plant-specific  
20 resolution. That's the difference.

21 MEMBER CORRADINI: All right. Then that's  
22 all. Thank you very much.

23 MR. WILSON: The third option is that it  
24 will get verified at overall ITAAC verification and  
25 we're working on the development of that guidance.

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1 And here I'm going to turn over to Mr. Tappert. He's  
2 got the lead for that. He can tell you how that's  
3 going.

4 MR. TAPPERT: This is John Tappert. I'm  
5 Glen Tracy's deputy director. And when we briefed you  
6 guys in July about our ITAAC closure process and all  
7 the great things we were doing it quickly became clear  
8 that the interest of the committee was on this DAC  
9 issue. And Mr. Borchardt's response to you, I think  
10 we tried to make two points. I think it was important  
11 that we make the distinction between the licensing and  
12 inspection phases, and the fact that when we get the  
13 DAC closure it's not to reassess the adequacy of the  
14 licensing basis, but to confirm that that licensing  
15 basis was actually turned into reality at the plant.  
16 We are commissioning, in fact up in our office right  
17 now we have the charter for the working group and  
18 we're going to have representatives from our  
19 inspection staff at the region as well as our  
20 technical colleagues, and their charter is to  
21 basically come up with more clarity both in our minds  
22 and also to share with their stakeholders about what  
23 this process involves, what the timing is, what the  
24 attributes is, what the level of effort is and what do  
25 we consider sufficient engagement to determine that

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1 the DAC is met. The timeframe is really in the next  
2 fiscal year. Our two big projects are to clean up  
3 this ITAAC maintenance issue which Jerry alluded to  
4 earlier as how we're going to control our - get  
5 information on the closed ITAAC until the III.G  
6 finding, and then really the next frontier is this DAC  
7 issue. So within the next year we intend to come back  
8 probably within the next six months we intend to come  
9 back to the committee to share where we are.

10 MEMBER BLEY: Harold, you had?

11 MEMBER RAY: No, I thought you were going  
12 to pass it back to the chairman, but I think you then  
13 pursued the area that I was going to go to. I can ask  
14 one final little twist on it. Are there any guidance  
15 at present with regard to when a design acceptance  
16 criteria is simply too conceptual to be incorporated,  
17 or is that just I'll know it when I see it kind of  
18 thing?

19 MR. WILSON: Like many things it's the  
20 latter. The staff needs to look at that. Also ACRS  
21 has an opportunity to look at that. Ideally we're  
22 getting that - let me say there's a tradeoff here. On  
23 the one hand you'd like it clear and objective and  
24 sometimes breaking it down into subparts helps the  
25 process of understanding what you need to do and

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1 implementing that. On the other hand, then you're  
2 increasing the number of ITAAC that need to be  
3 verified, so that sort of tradeoff needs to be worked  
4 through the process. But the industry needs to  
5 consider that as they propose it and the staff needs  
6 to review it as they get it.

7 MEMBER RAY: But there's nothing -

8 MR. WILSON: No magic answer.

9 MEMBER RAY: Right, okay.

10 MEMBER BLEY: I guess before I hand it  
11 back I'd reiterate what I said at the beginning. I  
12 think it would be really interesting if somebody could  
13 in at least some way use what's happening at AP1000 as  
14 a way to go back and see how using the DAC that were  
15 in the original design certification would have  
16 stacked up against the review that's going on now and  
17 would we have likely found the kind of problems that  
18 have been uncovered.

19 MEMBER STETKAR: Yes, I think that's  
20 really pertinent and something I was going to say  
21 because right at the moment we're looking at the  
22 first, I believe, COL for a site licensee and in that  
23 particular case the DAC for I&C are being passed  
24 through directly to what you're talking about, the  
25 third stage. They will not - they were not resolved

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1 in the DCD, they will not be resolved at the COL, they  
2 will be in fact passed through to resolution sometime  
3 between COL and fuel load. So that experience of how  
4 well you might be able to evaluate the design at that  
5 stage of the licensing process compared to the  
6 information that's available in the DCD is - would be  
7 very, very useful I think and very timely because this  
8 is both for AP1000 and this particular COL it's a  
9 realtime effort.

10 MR. WILSON: I agree with that, but I want  
11 to say that the long-term goal, design acceptance  
12 criteria, is that we'll phase it out and we won't use  
13 it in the future.

14 MEMBER STETKAR: That's the long-term  
15 goal, but in fact right now we're facing a COL where  
16 we haven't seen a lot about the design and probably  
17 won't, as a committee won't have the opportunity to  
18 see a lot about that design.

19 MEMBER BLEY: I guess if nobody else has  
20 anything, Mr. Chairman?

21 CHAIR BONACA: Thank you. Thank you for  
22 the presentation. It was very interesting and useful.  
23 The next item on the agenda is the committee report.  
24 The only part of this week, we have today's full  
25 committee meeting on the AP1000 changes and the

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1 subcommittee chairman will brief us on that. Be aware  
2 of - kindly with patience. Fifteen minutes.

3 MEMBER RAY: Fifteen minutes it'll be and  
4 then in order to get it done that way I'm going to ask  
5 the indulgence of my colleagues and let me read my  
6 report so I don't wander too much.

7 CHAIR BONACA: I just wanted to - we are  
8 not on the record anymore, right? We are not on the  
9 record. Okay.

10 (Whereupon, the foregoing matter went off  
11 the record at 10:59 a.m.)

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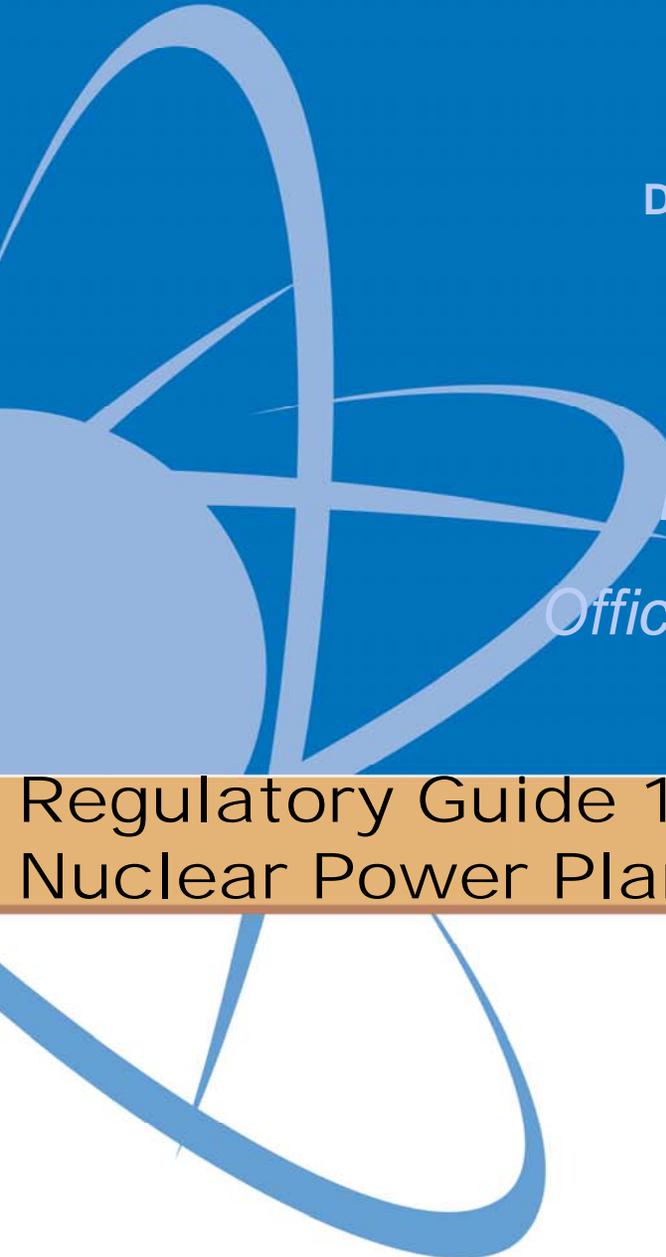
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**Sunil D. Weerakkody**

Deputy Division Director – Fire Protection

**Daniel M. Frumkin**

Team Leader, Fire Protection Branch

*Division of Risk Assessment*

*Office of Nuclear Reactor Regulation*

Regulatory Guide 1.189, Fire Protection for  
Nuclear Power Plants

**ACRS**

***October 9, 2009***

# Purpose

- Inform the Committee of Background and Regulatory Context for Regulatory Guide
- Inform the Committee that the guide is prepared and inter-office concurrences have been received
- Discuss Technical Topics
- Request Committee endorsement to issue the regulatory guide

# Background and Context

- Background
  - A rule that has key words which are undefined
  - Issuance of a rule without a regulatory guide
  - Tests that showed the need for regulatory action
  - Implications of backfit
- Proposed resolution to multiple spurious actuations in SECY 06-0196, "Issuance of Generic Letter 2006-xx, "Post-Fire Safe-Shutdown Circuits Analysis Spurious Actuations"
  - The Commission disapproved proposal and issued directions to staff via SRM-06-0196
- The staff has fulfilled the Commission direction in SRM-06-0196

# The Guide is Ready

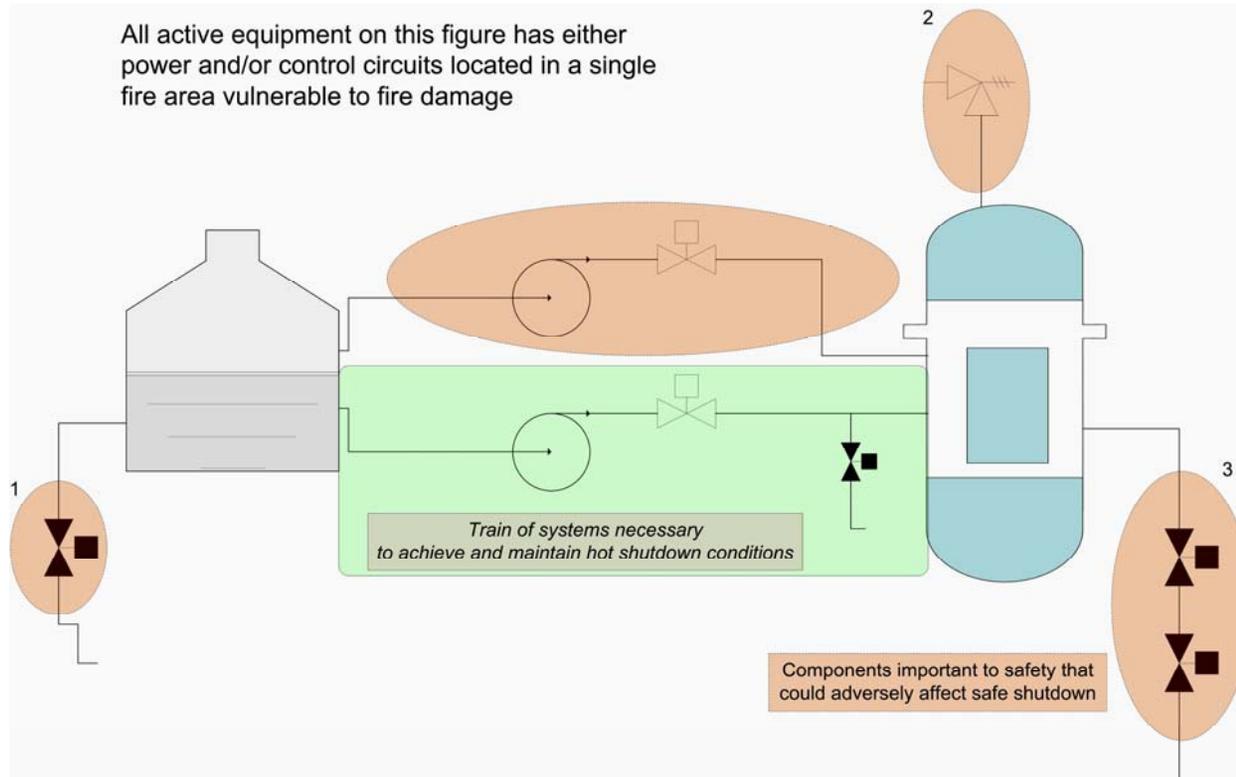
- NRC staff has prepared a Regulatory Guide that has received concurrences from all offices (NRO, OGC, RES).
  - Minor changes have been made to the regulatory guide to address comments from NRO, RES, OGC, and Technical Editor
- The staff has developed an update to the Regulatory Guide 1.189 that enables the staff to disposition circuit issues in a manner that assures plant safety and adequate protection

# Safe Shutdown Success Path Components vs. Components Important to Safe Shutdown (1)

- SECY 08-0093 describes two categories of equipment:
  - Safe Shutdown Success Path
    - Also “Green Box” or “Components Required for Hot Shutdown”
  - Components Important to Safe Shutdown
    - Also “Orange Box”
- Although both require protection to assure safety – only Safe Shutdown Success Path Components require Appendix R, III.G.2 protection

# Safe Shutdown Success Path Components vs. Components Important to Safe Shutdown (2)

- SECY 08-0093, "Resolution of Issues Related to Fire-Induced Circuit Failures."



# Concurrent Hot Shorts in Separate Cables for Components Important to Safe Shutdown

- Language in guide:
  - For circuits not sealed-in or latched for equipment important to safe shutdown, licensees should consider multiple fire-induced circuit failures in at least two separate cables. For circuits not sealed-in or latched for equipment important to safe shutdown that involves high-low pressure interfaces, licensees should consider circuit failures in at least three cables. This applies where defense-in-depth features, such as automatic suppression and limits on ignition sources and combustibles, are present. Where defense-in-depth features are not present, the number of cables to consider should not be limited to two or three as described above. In addition, for multiconductor cables, all circuit faults that could occur within the cable should be assumed to occur.

# Request for Endorsement

- NRC staff requests the Committee to issue a letter endorsing the guide
- Commission priority requires the NRC staff to issue guidance to licensee so that they can begin dispositioning circuit issues.
- Issuance of the Final Regulatory Guide 1.189 is planned for the fourth quarter of 2009
- Issuance of R.G. 1.189, will start the “clock” on Enforcement Guidance Memorandum (EGM) 09-002:
  - Licensees will have six months to identify noncompliances
  - And an additional 30 months to resolve those noncompliances

# Backup Slide

- Rule Language – 10 CFR 50, Appendix R, III.G.2
  - “where cables or equipment . . . of redundant trains of systems necessary to achieve and maintain hot shutdown conditions are located within the same fire area . . . , one of the following means of ensuring that one of the redundant trains is free of fire damage shall be provided: ”
    - 3 hour fire barrier
    - 20' and suppression and detection
    - 1 hour barrier and suppression and detection
- To summarize – only equipment necessary to achieve and maintain hot shutdown conditions is required to have III.G.2 protection provided



# **New Plant Licensing Process**

## **An Overview**

**Jerry N. Wilson, PE**  
**Office of New Reactors**

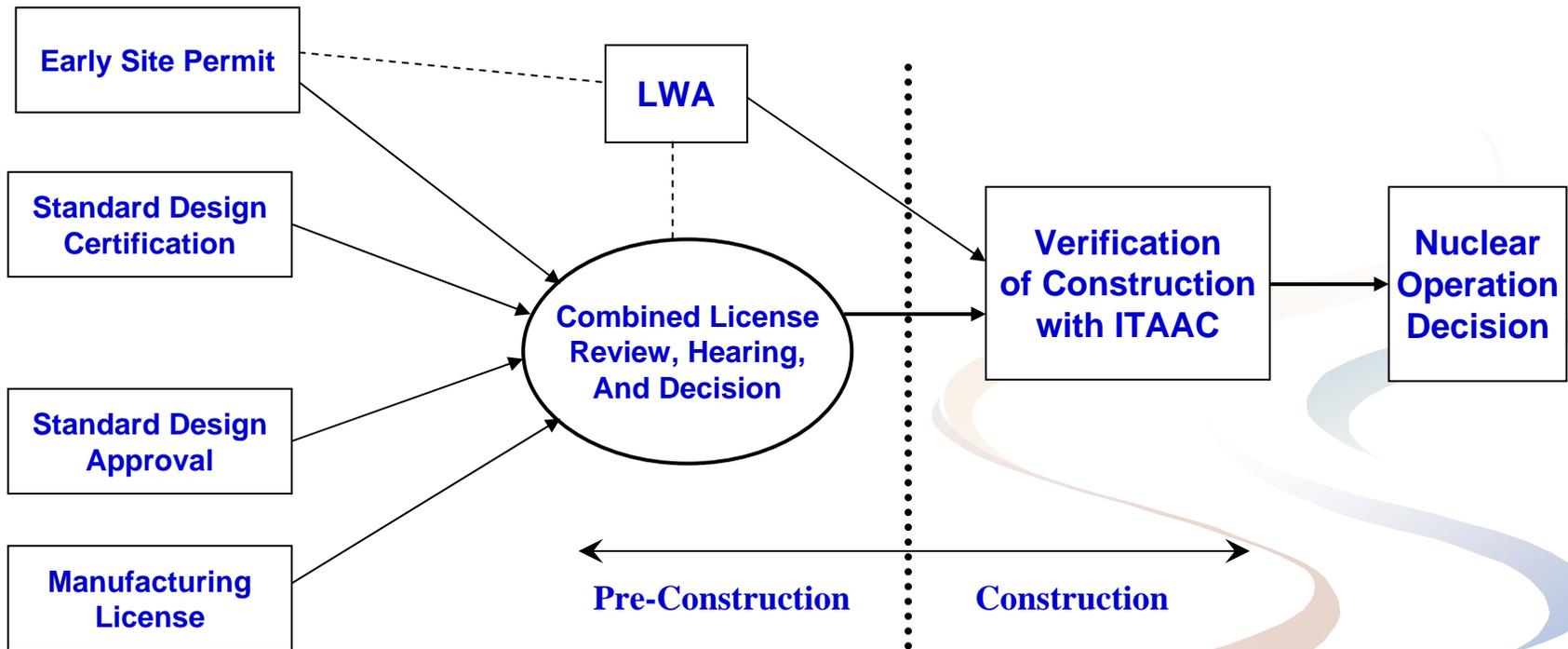
# Required for Licensing

- Applicant Qualifications
- Design Acceptability
- Environmental Impacts
- Operational Programs
- Site Safety
- Verification with ITAAC

# Part 52 Licensing Processes

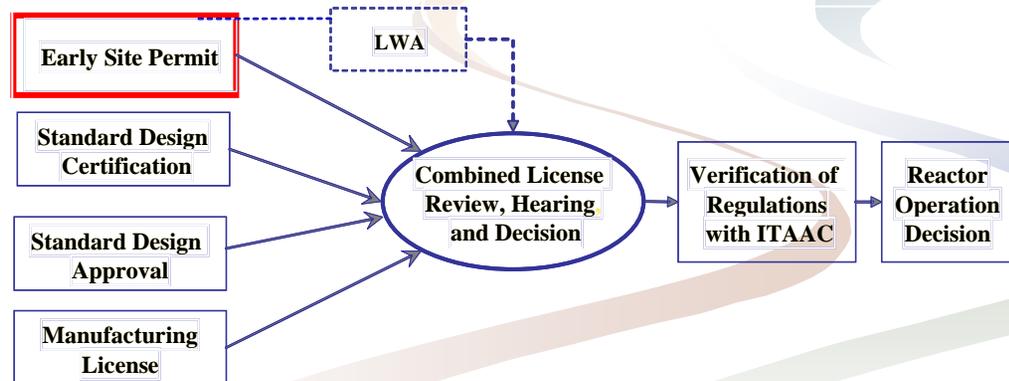
- Licensing Processes:
  - ⊕ Early Site Permit (ESP)
  - ⊕ Design Certification (DCR)
  - ⊕ Combined License (COL)
  - ⊕ Standard Design Approval
  - ⊕ Manufacturing License (ML)
- Provide a more predictable licensing process
- Resolve safety and environmental issues before authorizing construction
- Provide for timely & meaningful public participation
- Encourage standardization of nuclear plant designs
- Reduce financial risk to nuclear plant licensees

# Part 52 Licensing Process



## Early Site Permits (Subpart A)

- Allows applicant to “bank” a site
- Are licenses (partial construction permits)
- Good for 10-20 yrs [52.27] + renewal
- Review Scope [52.18] :
  - Site Safety
    - Site characteristics that affect the design
  - Environmental Impact
    - What the design can do to the environment
  - Emergency Preparedness

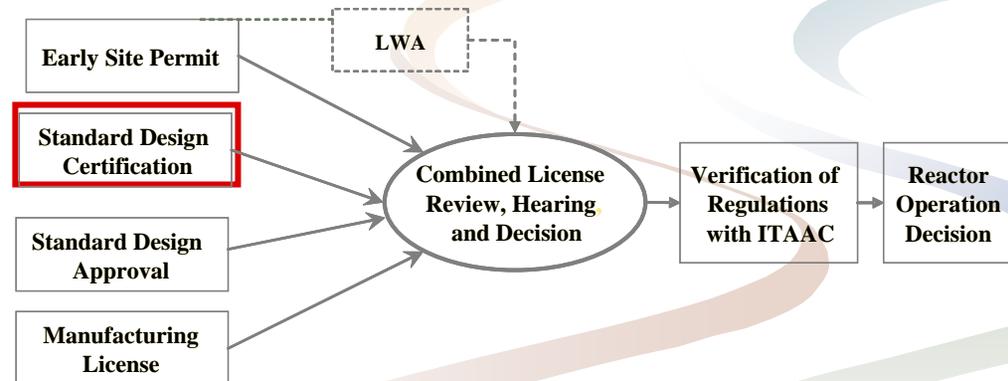


# Early Site Permits

- 4 early site permits (ESPs) issued
- 3 ESPs referenced in COL applications
- Challenge: applicant's use of plant parameter envelopes

## Standard Design Certifications (Subpart B)

- Allows NSSL vendor/applicant to obtain pre-approval of design (certified design becomes an Appendix to Part 52)
  - Reduces licensing uncertainty by resolving design issues early
  - Facilitates standardization
  - Facilitates regulatory finality through rulemaking
- Certification good for 15 yrs [52.55] + renewal

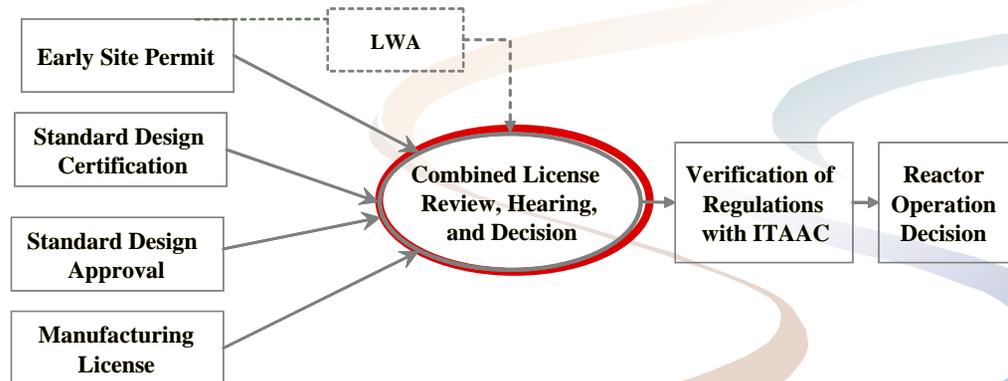


# Standard Design Certifications

- 4 designs certified
- 4 designs under review
- Challenges:
  - 1 certified design referenced
  - Incomplete designs (DAC)
  - Level of design detail

## Combined License (Subpart C)

- Combined construction permit and operating license with conditions [52.1(a)]
- Fundamental licensing process in Part 52 for reducing financial risk of applicants/licensees
- Can reference ESP, Certified Design, Design Approval, Manufacturing License, or none
- Lasts 40 yrs [52.104] + renewal



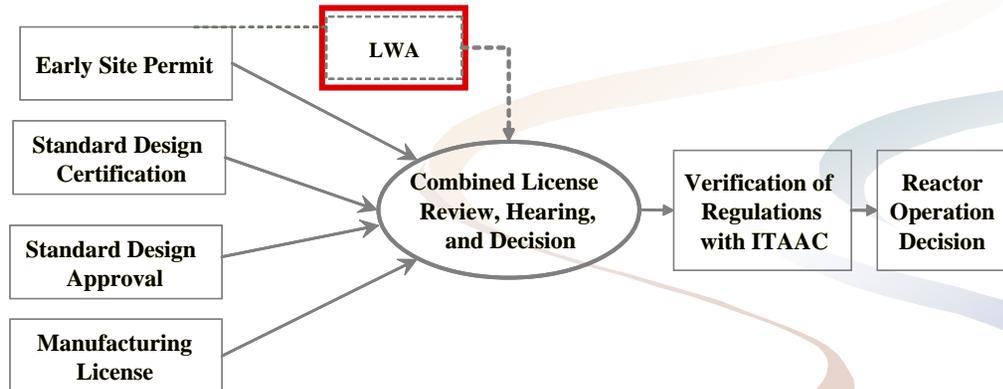
# Combined Licenses

- 17 applications for a combined license
- Successes:
  - Design center review approach
  - RCOL - one issue, one review
  - SCOLs - maximize standardization

Challenge: multiple applications for parallel COL & DCR reviews

## Limited Work Authorization (LWA)

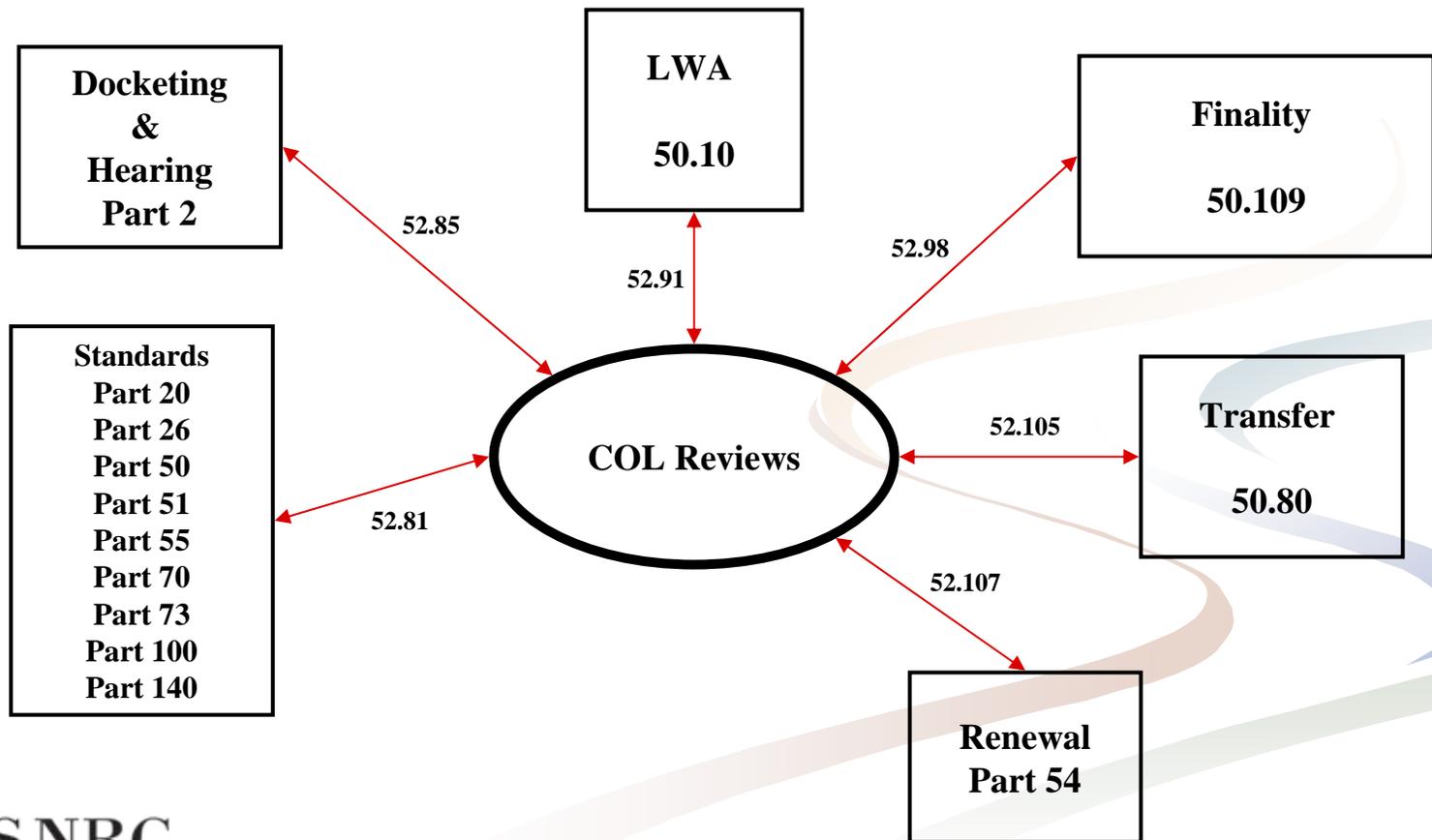
- May request LWA in advance of COL
- Safety review of requested activities
- EIS for requested activities
- Site Redress Plan
- Bifurcated hearing on LWA activities



# LWA Activities

- Activities that may be authorized under an LWA:
  - ⊕ Driving of piles
  - ⊕ Subsurface preparation
  - ⊕ Placement of backfill, concrete, or permanent retaining walls
  - ⊕ Installation of foundation

# Part 52 Uses other Regulations



# Revisions to Part 52

- Reorganized subparts w/common format & content
- Clarified applicability of technical requirements to each licensing process, e.g. Part 21 and App. B to Part 50
- Provided a process for amending design certifications
- Required COLs to provide schedule for completing ITAACs and notify NRC of scheduled fuel load date
- Required COLs to address operational programs
- Required COLs to maintain & upgrade PRAs

## Key Terms in Part 52

- (a) *Early site permit* means a Commission approval, issued under subpart A of this part, for a site or sites for one or more nuclear power facilities.
- (b) *Standard design certification or design certification* means a Commission approval, issued under subpart B of this part, of a final standard design for a nuclear power facility. A design so approved may be referred to as a certified standard design.
- (c) *Combined license* means a combined construction permit and operating license with conditions for a nuclear power facility issued under subpart C of this part.

## Key Terms in Part 52 (cont.)

(e) *Standard design approval or design approval* means an NRC staff approval, issued under subpart E of this part, of a final standard design for an entire nuclear power facility or a major portion thereof.

(f) *Manufacturing license* means a license, issued under subpart F of this part, authorizing the manufacture of nuclear power reactors but not their construction, installation, or operation at the sites on which the reactors are to be operated.

**ITAAC** – the inspections, tests, and analyses that the licensee shall perform, and the acceptance criteria that, if met, are necessary and sufficient to provide reasonable assurance that the facility has been constructed and will be operated in conformity with the license, the provisions of the Act, and the Commission’s regulations.