



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

May 28, 2014

MEMORANDUM TO: The Board and the Parties
NEXTERA ENERGY SEABROOK, LLC (Seabrook Station, Unit 1)
Docket No. 50-443-LR

SUBJECT: SERVICE OF COMMISSION MEETING TRANSCRIPT

On Thursday, May 8, 2014, the Commission was briefed on subsequent license renewal. The briefing included a panel of NRC Staff members who made a presentation on the status of research and development activities supporting subsequent license renewal, including the status of knowledge on aging of concrete structures.¹ Out of an abundance of caution, the transcript of this meeting² is being served on the Atomic Safety and Licensing Board and all parties to this proceeding, to ensure compliance with the provisions of 10 C.F.R. § 2.348 regarding separation of functions.

/RA/

Emile L. Julian
Assistant for Rulemakings
and Adjudications

¹ See "Subsequent License Renewal Research," Slide Presentation of Dr. Mirela Gavrilas, Acting Deputy Director, Division of Engineering, Office of Nuclear Regulatory Research" (ADAMS accession no. ML14132A002), Frame 84, page 17.

² Transcript, "Briefing on Subsequent License Renewal" (May 8, 2014) (ML14133A120).

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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BRIEFING ON SUBSEQUENT LICENSE RENEWAL

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THURSDAY

MAY 8, 2014

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ROCKVILLE, MARYLAND

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The Commission met at the Nuclear Regulatory Commission, One White Flint North, Commissioners Hearing Room, 11545 Rockville Pike, at 9:00 a.m., Allison M. Macfarlane, Chairman, presiding.

COMMISSION MEMBERS:

ALLISON M. MACFARLANE, Chairman

KRISTINE L. SVINICKI, Commissioner

GEORGE APOSTOLAKIS, Commissioner

WILLIAM D. MAGWOOD, IV, Commissioner

WILLIAM C. OSTENDORFF, Commissioner

EXTERNAL PANEL:

RICHARD A. REISTER, Department of Energy

SHERRY L. BERNHOFT, Electric Power Research Institute

MICHAEL P. GALLAGHER, Exelon

CHRISTOPHER E. EARLS, Nuclear Energy Institute

DAVID LOCHBAUM, Union of Concerned Scientists

NRC STAFF PANEL:

MARK SATORIUS, Executive Director for Operations

JOHN LUBINSKI, Director, Division of License Renewal, Office
of Nuclear Reactor Regulation

BO M. PHAM, Branch Chief, Division of License Renewal,
Subsequent Renewal, Guidance and Operations
Branch, NRR

MIRELA GAVRILAS, Branch Chief, Division of Engineering,
Corrosion and Metallurgy Branch, Office of Nuclear
Regulatory Research

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

(9:02 a.m.)

CHAIRMAN MACFARLANE: Is everybody ready?

I'd like to welcome the staff, the industry, the Department of Energy, members of the public who are here for today's meeting. The focus of the meeting today is the area of what we call subsequent license renewal and sometimes it's referred to as life beyond 60.

In 1991, the NRC established regulations at 10 CFR Part 54 for license renewal and amended those regulations in 1995. Since that time the staff has issued 73 license renewals and there are another 19 units currently under review. We now have 20 units operating in their period of what we call extended operation.

The regulations currently permit the possibility of additional license extensions, and some licensees are actively evaluating this option. The NRC staff, the Department of Energy, and industry are actively researching the aging related issues associated with operating nuclear power plants beyond 60 years.

Today the Commission is going to be briefed by two panels. First we'll hear from an external panel, the folks seated here, including Mr. Richard Reister from the Department of Energy, Ms. Sherry Bernhoft from the Electric Power Research Institute, Mr. Michael Gallagher from Exelon, Mr. Christopher Earls from the Nuclear Energy Institute, and Mr. David Lochbaum from the Union of Concerned Scientists.

This will be followed by a staff panel discussion of how the staff is preparing for handling applications for second license

1 renewals. I look forward to both presentations, the set presentations
2 and our discussion from the Commission, but first let me ask my fellow
3 Commissioners if anybody would like to make any comments. No?
4 Okay, great.

5 In that case I think we'll start with the external
6 panelists. We'll start with Mr. Reister from the Department of Energy.

7 MR. REISTER: Good morning. Thank you for
8 inviting me here today to discuss the Department of Energy Office of
9 Nuclear Energy's program on Light Water Reactor Sustainability.

10 The LWRS program began in 2009 with the recognition
11 that the U.S. government had a strategic interest in supporting the long
12 term operation of our existing fleet of nuclear power plants in support of
13 energy security, climate change objectives and to help avoid or at least
14 defer the high cost of building replacement capacity.

15 The program supports the President's all of the above
16 energy strategy and climate action plan. The LWRS program
17 conducts research that is generally longer term, higher risk than what
18 industry typically performs.

19 Along with material issues, typically a focus of
20 licensing, the LWRS program addresses the long term viability or
21 economics of continued plant operation. We believe that this federal
22 government program, by reducing uncertainty, helps to create an
23 environment for industry to make the long term investments necessary
24 to keep these plants operating safely and efficiently. Next slide,
25 please.

26 This graph illustrates the current and projected

1 capacity of existing nuclear power plants with 40- and 60-year licenses.
2 Assuming all plants received 60-year licenses, the slope of retirements
3 is very steep at about five plants per year in 2030 to 2035.

4 The rate of retirements that would occur without
5 subsequent license renewal would clearly present a significant
6 challenge to both our electricity supply infrastructure and our goal to
7 reduce carbon emissions.

8 The LWRS research program has three main focus
9 areas, materials aging and degradation; advanced instrumentation,
10 information, and control systems technologies; and risk-informed safety
11 margin characterization. I will cover each of these three areas in a little
12 bit more detail.

13 As plants age, the degradation of materials will
14 continue to occur. Our research is focused on being proactive by
15 conducting research on relevant materials. This includes materials
16 harvested from plants and materials that undergo accelerated aging.
17 When possible, mechanistic aging models are developed and
18 validated.

19 The results of our research are used by industry and
20 the regulators to inform and update their aging management programs.
21 More than half of our research funds are devoted to materials research.

22 For materials degradation issues we cover these five
23 elements, the collection of high quality data on observed degradation,
24 again from both the laboratory with accelerated degradation and from
25 materials harvested from operating plants; determining the underlying
26 physical phenomena causing the degradation; development of

1 mechanistic models based on the physical mechanisms rather than just
2 empirical trends; developing improved monitoring techniques by taking
3 advantage of new sensors and advanced data analysis techniques; and
4 investigating mitigation strategies to limit degradation. And, if needed,
5 economical repair or replacement with materials less susceptible to
6 degradation.

7 These are the materials and degradation mechanisms
8 we are focused on. The list and prioritization were developed from our
9 support and involvement in the development of the expanded materials
10 degradation assessment, a joint project with NRC's Office of Nuclear
11 Regulatory Research and with industry input.

12 Metals degradation remains a high priority research
13 area, including irradiation-assisted stress corrosion cracking; phase
14 transformations and swelling of core internals; embrittlement of the
15 reactor pressure vessel; cracking of nickel-based alloys; high
16 temperature effects on the aging of cast stainless steels; and the effects
17 of environmental conditions on the fatigue resistance of materials.

18 Concrete and cables aging in unique nuclear
19 environments for long term operation are fairly new research areas.
20 This work is needed to gain confidence in the expected performance of
21 these materials under extended service.

22 Finally, we are working with industry on advanced
23 repair and replacement technologies including weld repair of core
24 internals and advanced non-destructive examination techniques that
25 can help improve our ability to detect and understand existing
26 degradation. This research is closely coordinated with both the

1 Electric Power Research Institute using joint research plans and with
2 the NRC's Office of Nuclear Regulatory Research.

3 Our instrumentation, information, and control systems
4 research helps address the aging and reliability concerns of existing,
5 mostly analog, instrumentation and control systems still in use today.

6 We are conducting research with industry through a
7 series of pilot projects to develop and implement technologies needed
8 as part of a long term modernization strategy. The desired outcome of
9 the research is to facilitate the transition of nuclear power industry from
10 one that is labor-intensive and that still relies on analog I&C
11 technologies to one in which human performance is highly effective,
12 leveraging digital technologies that will be familiar to our future work
13 force.

14 And our third area is research on risk-informed safety
15 margin characterization and supports a methodology to better
16 understand plant safety margins. A better understanding of how plant
17 safety margins are changing, for example, with plant changes such as
18 power upgrades or with aging effects, would be helpful for decisions on
19 plant investments.

20 The methodology uses deterministic simulation of a
21 plant with probabilities used for various scenario events in a Monte
22 Carlo style analysis. This results in a distribution of outcomes.

23 A set of tools are being developed that we hope will make this
24 methodology practical for use by industry, and they're listed on the
25 slides. RELAP-7, a thermal hydraulics code, RAVEN is a simulation
26 controller, and an aging simulation model we call Grizzly.

1 Specific to long term operation we are looking at aging
2 cycles such as irradiation, thermal stresses, and fatigue to better
3 understand how they influence plant safety margins.

4 In summary, DOE research is focused on supporting
5 continued safe and economic operation. We are proactively focusing
6 on degradation that might occur beyond 60 years of operation. Our
7 research has not yet identified any technical showstoppers to long term
8 operation.

9 We are developing improved materials monitoring
10 techniques that will help detect degradation earlier should it occur. We
11 work with industry and the regulator so that our research results can be
12 used to update and enhance aging management programs. Thank
13 you.

14 CHAIRMAN MACFARLANE: Thank you.

15 Ms. Bernhoft?

16 MS. BERNHOFT: Yes, thank you for inviting me this
17 morning. I'm very happy to have the opportunity to share a brief
18 background on the research that EPRI's been doing to support long
19 term operations.

20 As a tee up, the EPRI Long Term Operations Program
21 has been in existence since 2009 and it has two purposes. One is, our
22 first purpose is to provide information for the plant owners that are faced
23 with evaluating a decision whether to extend their operating license or
24 not, and second is we want to ensure that we have confidence that all
25 the research is being performed in a timely manner to support these
26 decisions for long term operations of the fleet of plants. Next

overhead.

So aging management programs are well established and successfully being used today to inspect, evaluate, and as necessary take corrective actions based on inspection findings. This overhead lists some of the aspects of aging management programs where R&D plays a critical role.

As we'll present in the next few overheads, we have living issue programs that have been performing research in all these areas for several decades. Based on this wealth of knowledge, we have a good understanding of aging mechanisms, inspection technologies, and have performed evaluations and assessments based on these inspection results.

This work is documented in EPRI technical publications, many of which are referenced by the U.S. NRC in GALL rev 2 as the acceptable method for aging management programs. Next overhead, please.

The left hand column shows the high level summary of some of the aging impacts that are included and have been identified in our research projects. The right hand column shows the highest priority components for consideration for long term operations. These are considered the highest priority, since the cost to repair or replace these components could be significant.

Last year we completed a project within EPRI that mapped the existing EPRI research programs to the aging management programs in the GALL rev 2. We did this as a parity check to ensure that the research programs and plans that we have in

place right now are complete and on our target.

From this effort we concluded that all the necessary research has been identified and is in place to support aging management programs for continued safe long term operations. In the next few areas I'm going to touch briefly on these four high priority research areas. Next overhead, please.

Before starting into some of the details on the metals research, I'd like to highlight how as an industry we manage RCS metals. In 2004, the industry formally established what they called NEI Initiative 03-08.

This was implemented at the coming together of several of the industry executives to put together a standard or a template of an overarching, industry-led management strategy. Some of the aspects of it are the requirements for inspection, evaluation and repairs; documentation and reporting of inspection results; sharing of the operating experience; and routine reports to the NRC.

EPRI also has a formal process called the Materials Degradation Matrix, or the MDM, and the Issue Management Table that we use to identify research for aging mechanisms and prioritize those.

These documents were used, as Mr. Reister talked about the EMDA, they were some of the source documents that were used for development of the EMDA. They are living documents. They are updated routinely based on expert solicitation, operating experience, inspection findings, and research results. Next slide, please.

These are some of the action plans or the issue

1 management programs that are all managed under the NEI Initiative
2 03-08. It shows that we have several programs in PWR, BWR steam
3 generators, basic corrosion research, water chemistry, and we also
4 have the engagement of the major Entrepolis vendors -- the PWR
5 Owner's Group, and then the GE is involved through BWR VIP
6 program. Next overhead, please.

7 In the area of primary metals there is decades of
8 ongoing research that has been established to manage aging effects
9 such as understanding initiation of flaws, flaw growth rates, inspection
10 and monitoring methods, mitigation strategies, and repairs. This R&D
11 is driven by these living issue programs that I talked about on the
12 previous overhead, and the research results are routinely shared in
13 technical presentations and publications.

14 Specific to the reactor pressure vessel, the material
15 properties of the reactor pressure vessel are assessed through periodic
16 removal and testing of surveillance capsules to establish trend
17 correlations. There is an existing surveillance data out to 80 years of
18 operations, and actions are in place to generate additional exposure
19 data by using previously tested specimens, and reintroducing capsules
20 into host reactors increase this database and improve the trend
21 correlations out to the long term operations time frame. This data will
22 be used to support and supplement our existing database.

23 Additionally, as Mr. Reister discussed, EPRI works in
24 close coordination and communication with DOE in all the RCS metals
25 areas and just materials aging in general. Next overhead, please.

26 Another area of focus for high priority research was

1 with electrical cables. Similar to the situation with metals, EPRI has
2 been conducting research for greater than 25 years to better
3 understand cable insulation material aging and possible degradation
4 mechanisms. Several publications and technical presentations have
5 been made in the area of cable aging management, inspections, and
6 monitoring.

7 The primary purpose of the EPRI projects are to
8 support the utility members for making informed decisions on cable
9 management program implementation and look for possible cable
10 replacements or additional monitoring methods to support long-term
11 operations. Working closely with the DOE Light Water Reactor
12 Sustainability Program and NRC Research we have a very detailed
13 road map that talks about the research activities that are still ongoing to
14 collect additional information on thermally and radiation aged cables,
15 cables in submerged environments, and develop improved cable
16 testing and condition monitoring techniques.

17 We also have a very well established cable users
18 group which meets twice a year to share operating experience and
19 research results. Next overhead, please.

20 The other area of interest for long term operations,
21 primary area, is in the concrete. EPRI has established an R&D
22 working group in the area of concrete, and this is to help inform the
23 members of operating experience and research results.

24 Based on existing literature and information obtained
25 from international test programs on concrete radiation exposure, there
26 is data available on concrete mechanistic properties when exposed to

1 radiation levels expected to occur out to 80 years of operation at the
2 biological shield wall and reactor support structures.

3 This data shows no appreciable deformation with
4 respect to compressive strength or expected radiation levels out to 80
5 years of operations. The next step in our research plan, working
6 closely with the DOE program, is testing to verify the concrete
7 mechanical properties at the far end of the curve for the higher fluence
8 and bounding plant levels.

9 We are also in the second of a three-year program to
10 model the impacts of boric acid on spent fuel pool structures and we're
11 developing techniques for improved surface and below surface
12 inspection and monitoring of concrete structures. Next slide, please.

13 So in summary, the technical basis for aging
14 management is well established and in use. The use of aging
15 management programs will ensure detection of aging effects, provide
16 the technical basis for evaluation, and as needed, corrective actions.

17 The EPRI R&D programs discussed today are parts of
18 living programs. We work with our members to gather operating
19 experience, inspection results, and update the technical reports based
20 on this information and the research results.

21 Continuous improvements for long term operations is a
22 significant part of our research plans and closely coordinated with the
23 DOE. Some of these efforts are better modeling of the degradation,
24 improved inspection technology, advances in our assessment and
25 evaluation methodology, and online monitoring. Thank you for your
26 time today.

1 CHAIRMAN MACFARLANE: Thank you.

2 Mr. Gallagher?

3 MR. GALLAGHER: Okay, good morning. And
4 thanks for this opportunity to express views for myself and the industry
5 on this important topic.

6 Just a little bit of background about myself first. I've
7 been in the industry for 33 years, for my whole career. I've been doing
8 Exelon's license renewal projects since 2006, and previously before
9 that I had a senior reactor operator license at our Limerick Generating
10 Station and was the plant manager there for a period of time.

11 So first of all, just expressing the industry's interest in
12 subsequent license renewal, we are very interested in subsequent
13 license renewal. And the main reason is, if you can go to Slide 2, is
14 because our nuclear plants are very beneficial to our nation. We think
15 they're important national assets. They're important to our nation, our
16 community, and our customers.

17 And to get that message across, recently we've
18 embarked on a campaign to give our perspective on the value of our
19 nuclear plants to our nation. This is an industry initiative, and we call
20 this campaign, Nuclear Matters. And I believe these key points are
21 valid not only for now, but also for why subsequent license renewals
22 should be pursued.

23 So first of all, there's some unique aspects for our
24 nuclear power plants, and again they are national assets. The first is,
25 always-on reliability. So the reliability of the electric grid depends on
26 nuclear energy.

1 One-fifth of our nation's power is generated using
2 nuclear power. Nuclear energy plants maintain national average
3 reliability between 85 and 90 percent, and many power plants routinely
4 operate in a 93-95 percent capacity over extended periods of time.
5 The loss of nuclear energy plants would have major impacts on electric
6 prices, greater liability, and access to dependable energy for our nation.

7 Another key benefit as Mr. Reister talked about is our
8 carbon-free electricity. So nuclear energy facilities are among the
9 cleanest sources of electricity available. They produce virtually no
10 carbon dioxide or air pollution.

11 Nuclear energy produces more clean-air energy than
12 all other sources combined, and is the only one that can produce large
13 amounts of electricity around the clock, 365 days a year. Nuclear
14 accounted for 64 percent of America's clean energy in 2012, and
15 existing nuclear plants prevented 561 million metric tons of carbon
16 dioxide emissions in 2012, and that's equal to about 110 million
17 automobiles.

18 Those same plants also prevented one million short
19 tons of sulfur dioxide which contributes to acid rain, and a half million
20 short tons of nitric oxide which causes urban smog. So without
21 nuclear energy, the United States cannot meet its clean energy or
22 carbon reduction goals.

23 And lastly, our nuclear plants are very important to our
24 economy. They are economic engines in our communities. Nuclear
25 production costs were among the lowest of all around-the-clock
26 generating sources at 2. cents per kilowatt hour, and by comparison,

1 coal is about 3.27 cents per kilowatt hour, natural gas 3.4.

2 So in fact, the average production costs for nuclear
3 energy has remained well below three cents a kilowatt hour for the past
4 18 years. The supply of reliable, resilient, and affordable energy helps
5 power America's economy.

6 Nuclear plants generate substantial domestic
7 economic value in electric sales, \$40-50 billion each year, and provide
8 100,000 well-paying jobs in the United States. These jobs pay on the
9 average 36 percent above prevailing local wages and more than any
10 other generating source of equivalent size.

11 Nuclear plants procure \$14 billion of goods and
12 services from over 22,000 domestic vendors annually, and they
13 contribute \$8.3 billion through local, state, and federal taxes. So the
14 individual plants are major economic engines for the communities in
15 which they operate. The typical U.S. nuclear plant has an average
16 annual payroll of \$40 million, and it generates about \$470 million a year
17 in sales of goods and services and pays \$16 million in local and state
18 taxes that benefit schools, roads, parks, and other infrastructure.

19 So we really believe that our nuclear fleet is very
20 important to the nation, and for that reason subsequent license renewal
21 is very important. If you go to Slide 3. Because these assets are so
22 important, it is so important for us to get this right.

23 And I just want to give some of our perspective on what
24 we believe is doing it right. And the first is we must continue to operate
25 the plant safely. That's our responsibility. That's a given. We
26 understand our responsibility to ensure the health and safety of the

1 public, and we will continue to operate in this manner throughout the
2 period of extended operation and the subsequent periods of extended
3 operation.

4 The next key point I have here is about regulatory
5 stability, so this is essential. Our belief is that the existing rule is
6 comprehensive. It accommodates subsequent license renewal. It's
7 proven, and we can continue with it moving forward. And this is
8 essential for us that we have the regulatory stability.

9 If you go to Slide 4, another aspect for success would
10 be to accommodate the lead times for energy planning. We need lead
11 times for the energy planning, but also lead time for rigorous application
12 development, the thorough reviews from the NRC staff, and enough
13 time for final NRC decisions well before any license terms expire.

14 And if you look at the license renewal application lead
15 times for this round of license renewals, as the Chairman said there's
16 73 licenses that have been approved, this chart here shows the
17 application submittals prior to expiration, and on average of about 13
18 years before expiration for the first renewals.

19 But you can see the range there going from around
20 five, which is the time for timely renewal, to even greater than 20 for
21 some folks, and that's based on their business planning and business
22 needs of that particular applicant.

23 If you go to the next slide, Slide 5, so because the
24 process is proven and so mature, you know, we think we should build
25 off the success of the first license renewals for subsequent license
26 renewal. You know, aging management is a continuum. We don't

1 see any cliffs in aging management. And we already have a lot of
2 experience in managing the aging of our plants.

3 Yes, we're in a period of extended operation for 20
4 plants for five years, but we have over 45 years of aging management
5 experience as many of the programs that we implement were existing
6 programs. Existing programs that in some cases were enhanced, but
7 in some cases were in place fully before any license renewals were
8 developed.

9 And the license renewal implementation guidance is
10 thorough and has been frequently updated. Aging management has
11 improved with operating experience and ongoing research, as Ms.
12 Bernhoft and Mr. Reister indicated, and so we think we should continue
13 to build on the over 45 years of industry aging management experience.

14 And finally, I'll just close with Slide 6. It's just a
15 pictorial depiction of how aging management programs are developed
16 and maintained. And, you know, the beauty of this particular rule and
17 process is that it incorporates corrective action program and operating
18 experience to provide that feedback loop to continue to ensure that we
19 have the right aging management programs in place and that can
20 continue on into subsequent license renewal. So thanks again for this
21 opportunity.

22 CHAIRMAN MACFARLANE: Mr. Earls?

23 MR. EARLS: Thank you very much. I would also like
24 to express my thanks for the opportunity to address you today on this
25 very important topic.

26 As Rich and Sherry have mentioned, there's been

1 extensive R&D efforts ongoing and will continue in the future. Mike's
2 expressed the interest in the industry in moving forward in this area, in
3 particular subsequent license renewal.

4 What I'd like to focus in on is the SECY that was
5 recently released by the staff on the ongoing staff activities to assess
6 the regulatory considerations of the power reactor subsequent license
7 renewal. Next slide, please.

8 I think, before we get into talking about the specifics of
9 the proposed rulemaking and options, I think it's important to revisit two
10 of the key guiding principles that the Commission established back in
11 1991 around the license renewal. I'm going to go ahead and read
12 those.

13 The first is, the current regulatory process is adequate
14 to ensure that the licensing basis of all operating plants provides and
15 maintains an acceptable level of safety so that operation will not be
16 detrimental to public health and safety or common defense and
17 security.

18 And secondly, each plant's licensing basis is required
19 to be maintained during renewal term in the same manner and to the
20 same extent as during the original licensing term. These are two very
21 key principles that guide the license renewal.

22 And I think as we go through the examples today we
23 should keep those in mind. The Commission back in 1991 recognized
24 the ongoing efforts that occurred on a daily basis with oversight and
25 interaction between the regulator and the licensee, and deemed those
26 activities to be sufficient to cover the normal operation period.

1 And that enabled the rule to be focused more, and
2 more focused on the period of extended operation, in particular with the
3 aging management programs in that time period and any other specific
4 issues that may be specific to an extended period of operation. Next
5 slide, please.

6 Before I discuss the various conclusions of the staff, I'd
7 like to express and applaud the efforts of the staff in reviewing the
8 experiences with the first go-around in license renewal. The staff has
9 conducted many public meetings soliciting feedback from the public on
10 those lessons learned, that they've expressed a willingness to accept
11 feedback.

12 They've conducted many, several audits at plants that
13 are in the period of extended operation to assess how well the aging
14 management programs are established and maintained, and
15 throughout these efforts they've gained a good appreciation for how
16 well the license renewal process has worked.

17 So in the first recommendation or conclusion that we
18 would strongly support is that the program worked well. I mean, as
19 you mentioned earlier, 73 plants have been through the process. No
20 significant issues have arisen. The process, the rule works very well,
21 and we feel that it will work well going forward.

22 The next conclusion was that the environmental issues
23 are sufficiently covered. We agree with that as well. We think that
24 process provides a good opportunity to review those issues, and in fact
25 the guidance surrounding that was just recently revised last year.

26 With regards to the conclusion on some of the

1 guidance and guiding documents, specifically the GALL, we also
2 support those efforts to review those documents with a view towards
3 subsequent license renewal. And in fact the industry has stood up a
4 group of folks to help provide input to the staff on those revisions to try
5 to reflect our understandings in a current situation and make sure that
6 we've got those incorporated in, and we support those efforts.

7 And then finally we support the conclusion that the staff came
8 to with regards to the use of PRA. PRA does not have a specific
9 application in subsequent license renewal. While we believe it's
10 important and continue to work with the staff in trying to identify ways to
11 better use it, we don't believe it's specific to subsequent license renewal
12 and would support the staff's conclusion on that. Next slide, please.

13 We do have some concerns with the staff's interest in
14 pursuing rulemaking. We believe that no significant safety issues
15 have been identified. No significant problems with the process have
16 been identified.

17 And as a result we think this rulemaking would be a
18 very low priority considering all the other activities that are going on
19 right now. And so we believe pursuing rulemaking in this area would
20 be inconsistent with the efforts to focus on the cumulative impacts on
21 the industry.

22 The staff has indicated that this rulemaking would
23 make the process more efficient. We don't quite understand that.
24 There's been no evidence to support that, and in fact we think a
25 rulemaking at this time might actually complicate the situation and
26 certainly would delay the application, the submittal of an application.

1 So that's another aspect to consider. Next slide, please.

2 I'm not going to spend a lot of time on this slide. This
3 basically summarizes the various options. Option 1 is no change.
4 Options 2 and 3 and 4 build upon each other and go from minor
5 changes to more extensive changes. Each successive step
6 subsumes the previous one, so Option 4 would include the items in
7 Options 2 and 3. Next slide, please.

8 Option 1. Option 1 is the no rulemaking option. We
9 strongly support this option. As we've stated, the process has served
10 us well. This process was set up with the intent of being repeatable.

11 It had subsequent license renewal in mind when it was
12 put together. There was no limitation on the number of times renewal
13 could be pursued. And so we think that's an important aspect of this.

14 As stated by Sherry and Rich, we have R&D in place
15 that's providing the technical background for what we're doing. The
16 regulatory processes that we rely on during operations continue to be in
17 place and continue to be sound, and for these reasons we think Option
18 1 is the right option to pursue in addition or along with some changes to
19 guidance to strengthen the program in that area. Next slide, please.

20 Options 2 and 3 are pretty minor in nature. Option 2 is
21 really almost just editorial in nature, and in fact the staff recognized that
22 with the statement that the changes alone may not warrant resource
23 allocation to conduct the rulemaking. We would agree with that. We
24 think they're sufficiently covered now and would not require rulemaking.

25 Timely renewal. We think this is a very unusual or
26 does not occur very often. We've only had one circumstance where

1 it's occurred, and the staff and the licensee worked together to deal with
2 that situation in a very good way. They were able to make the
3 transition and maintain the focus on safety and will be able to transition
4 into the license renewal period once we get through the waste
5 confidence rule. With regards to the additional pieces of equipment for
6 scoping, we identified two areas. The loss of large areas or B.5.b or
7 aircraft impact, whatever you think of it as, and the FLEX equipment
8 associated with our response to Fukushima.

9 We believe these classes of equipment should be
10 treated in a manner similar to EP and take reliance on the activities that
11 are in place or will be in place to monitor this equipment and to inspect it
12 on an ongoing basis.

13 We also think if these systems were incorporated that
14 they would have only a minor impact on the scoping because they do
15 not have a lot of passive equipment associated with them. Next slide,
16 please.

17 This is Option 4, and I think this is the crux of the staff's
18 interest in rulemaking and that has to do with the monitoring and
19 trending and assessment activities of the aging management programs
20 and operating experience.

21 We believe that there's sufficient rule language and
22 guidance out there. We are pursuing these. I'll be glad in the Q&A
23 session to describe a specific example of how we deal with an aging
24 management program and provide assessment and feedback.

25 And so we don't believe this would warrant a
26 rulemaking in and of itself. We think guidance can handle it, and in fact

1 the industry is working on a couple of efforts to strengthen guidance in
2 this area. Next slide.

3 Limit the time on subsequent license rule. I won't
4 spend a lot of time on that. We don't think the situation has changed
5 since the original rulemaking in this area, and we do not believe that we
6 should reduce the time frame for which an application can be filed.
7 Next slide, please.

8 Final piece of Option 4 with regards to the design
9 parameters, we think this is out of step with the principles of the license
10 renewal and I would refer you back to the original principles that I
11 started off with. We don't believe that it's efficient or effective to re-look
12 at the design and licensing basis during the license renewal process.
13 And the last slide.

14 Summary. As we've stated today, the process works.
15 It's set up to deal with subsequent license renewal, and we think we
16 should move forward with that as it stands. Thank you.

17 CHAIRMAN MACFARLANE: Thank you.

18 Mr. Lochbaum?

19 MR. LOCHBAUM: Good morning, and thank you for
20 this opportunity to share our perspectives from a slightly different
21 standpoint. Slide 2, please. I'll focus on three issues today and will
22 do so in less than a dozen slides for a change. Next slide, please.

23 UCS believes there's nothing inherently unsafe about a
24 nuclear power reactor operating for up to 60 or even up to 80 years.
25 Next slide, please. Our first concern involves the one-time evaluations
26 of severe accident and mitigating alternatives. For example, because

1 the Limerick plant evaluated SAMAs during initial licensing, SAMAs
2 were not reevaluated with their license renewal application. Next
3 slide, please.

4 One-time SAMA evaluations rely on three invalid
5 assumptions. That safety innovations will not have emerged since the
6 last evaluation, that populations have not increased since the last
7 evaluation, and that costs have not changed since the last evaluation.
8 Next slide, please.

9 Our second concern involves the bizarre position in
10 line approach to nuclear safety. Ginna and Point Beach are very
11 similar plants in terms of design and age, but because the NRC revised
12 its license renewal requirements in between, Point Beach is required to
13 have an Alloy 600 aging management program while Ginna is not.
14 Next slide, please.

15 The NRC's regulations in 10 CFR 50.100 and 50.109, if
16 followed, would require all relicensed reactors to have Alloy 600 aging
17 management programs or none of them to have them, not just those
18 that are towards the end of the license renewal line. Next slide,
19 please.

20 Our third and last concern this morning deals with
21 compliance with current licensing basis requirements. The NRC
22 revised its license renewal regulation in late 1991 to presume that its
23 oversight activities ensure that reactors comply with the current
24 licensing basis requirements. But ample evidence shows that this
25 assumption is invalid.

26 A 1997 report by the NRC showed that design errors

1 were being found on almost a daily basis, until two days ago. More
2 recently, the Fort Calhoun plant restarted late last year after two and a
3 half years of being shut down to fix a litany of design basis errors and
4 current licensing basis shortfalls.

5 Many of these shortcomings had existed undetected at
6 the plant for decades. More recently, Browns Ferry Unit 3 scrambled
7 due to a design flaw that has yet been found and fixed two days ago,
8 May 6th. Next slide, please.

9 The bottom line is that compliance with current
10 licensing basis requirements has never been shown to be valid at any
11 nuclear plant in the country, not any plant at any time. Next slide,
12 please.

13 To resolve these concerns, we recommend that SAMA
14 evaluations be required with all license renewal applications, that the
15 NRC comply with 10 CFR 50.100 and 50.109, and that the NRC verify
16 compliance with current licensing basis requirements either during
17 license renewal or as part of its routine oversight activities. Thank you.

18 CHAIRMAN MACFARLANE: Thank you. All right,
19 now we have time for questions, and we will start off with Commissioner
20 Magwood.

21 COMMISSIONER MAGWOOD: Thank you
22 Chairman, and thank all of you for your presentations today. We had a
23 lot of good comments. Let me start off by welcoming Rich to the table.
24 Rich and I worked together in the past. It's good to see you again, and
25 your colleague Tom in the back there.

26 So it's always a pleasure to see you folks and to see

1 you're doing good work. Oh, I should say that some of this sounds
2 familiar. I swear we talked about this about 15 years ago and you're
3 still doing the same thing, so hopefully there's been progress in that
4 time frame.

5 One question that comes to mind, because I know
6 some of this work has been talked about in the past. I'm sure Tom
7 remembers the NEPO program, for example, one of the earlier
8 programs in the 1990s. And I wonder how much of the old work got
9 used by industry?

10 Did it simply go on a shelf someplace and collect dust?
11 And if it did, how do you keep what you're doing now from collecting
12 dust? It's great to hear you're coordinating with EPRI, but how does it
13 actually go from the research that DOE is sponsoring at the labs or
14 wherever else it's being sponsored and actually end up being used by
15 plants, not just become a report that sits out in cyberspace?

16 MR. REISTER: Thank you. I probably can't speak
17 well to the past programs, you know, how well that was used. But our
18 current programs, we do work very closely, I would say, with EPRI and
19 the industry to identify how our research projects, although they do tend
20 to be longer term and more basic in nature and it's a little bit more
21 difficult for them to be applied directly by a plant, we work with EPRI on
22 how to convert those basic research outcomes into guidance that they
23 can provide to their plants in the guidance that they do. So they help to
24 convert those more fundamental research products.

25 I mean all the research that we complete, the reports
26 are available publicly, and we also work with NRC's Office of Research

1 so that they have access to that information as well. And so we do try
2 to, we're very cognizant of this issue and try to work to make our
3 research results useful.

4 COMMISSIONER MAGWOOD: Yes, Ms. Bernhoft,
5 you wanted to comment on that?

6 MS. BERNHOFT: Yes, probably the best way to
7 illustrate it is an example. And so one of the examples we have is
8 called an advance welding project. Current materials like vessel
9 internals with a high radiation exposure, you can't weld on those right
10 now due to the helium inclusions in those. So joining with DOE, we're
11 doing some advance welding.

12 And so, you know, we've got the development of some
13 laser welds going on in EPRI. We're partnering with Oak Ridge
14 National Labs. They're irradiating samples. They're building the hot
15 cells. And then we're taking those research results together, doing the
16 finite element analysis to show that we're lowering the stresses on the
17 weld so that you can weld highly irradiated materials.

18 And then they'll complete that work at Oak Ridge by
19 2015, and then working with EPRI we'll take it through the code
20 committees to get that repair technique approved. That's just one
21 example.

22 COMMISSIONER MAGWOOD: No, I appreciate that.
23 And since we have an operator at the table maybe you can round this
24 out. How does this long term research that DOE sponsors and is
25 coordinating with EPRI, how does that reach the plant level? How
26 does this actually get used?

1 MR. GALLAGHER: Yes, I think it mostly is through
2 the EPRI products, but I know that some of the background, you know,
3 you always want to have the breadth of input on the research, and
4 some of the base research that DOE does through the programs they
5 have is utilized in the EPRI products and then we apply those EPRI
6 products.

7 Many of the products, EPRI products, you know, are
8 part of the aging management programs themselves so we implement
9 that specific product in order to have an effective aging management
10 program. So I think that the base research is in there from DOE.

11 COMMISSIONER MAGWOOD: So does that
12 suggest that if a DOE research project doesn't find its way into an EPRI
13 report you don't use it?

14 MR. GALLAGHER: You mean are there other ways
15 we could use it, other --

16 COMMISSIONER MAGWOOD: No, I'm asking of
17 DOE has a research result that doesn't find its way into an EPRI
18 document, does that mean that you don't see it and you don't use it?

19 MR. GALLAGHER: I wouldn't say that. But I think
20 our corporate program owners, you know, will search for products that
21 are out there relative to issues we're working on, say, you know, a
22 buried pipe program, the program owner will look for the body of
23 research that's out there and utilize it.

24 So, you know, it is available and I'm sure that we'll use
25 that from a program perspective.

26 COMMISSIONER MAGWOOD: Okay, I'll ask a

1 general question to Ms. Bernhoft and Rich Reister. What do you see,
2 just for a really broad question here, what do you see as the long pole in
3 the tent when you think about plants operating for that additional 20
4 years, you know, 60 to 80?

5 What is the technical issue that you think will need the
6 most research and will need to receive the most attention?

7 MR. REISTER: I'm not sure of what the particular
8 issue might be. I think the area we tend to spend our most resources
9 on are materials issues and metals in particular.

10 So I think the long term aging and the strategy for
11 addressing those issues, an example might be core internals, where
12 there's still issues about how long, and the best strategy for managing
13 the aging of core internals is whether you can repair them or whether
14 you need to replace them at some point.

15 So I think those types of issues that really are driven by
16 economics ultimately, how much would it cost to fix an issue, could
17 drive, you know, long term operation decisions by plants.

18 MR. GALLAGHER: Just to add. You know, the
19 initiative we actually have with EPRI and DOE participating is really a
20 long term operation. So here we're focused on subsequent license
21 renewal, so materials issues are one of the bigger things in subsequent
22 license renewal. But, you know, the breadth of long-term operations is
23 basically everything in the power plant.

24 And I know there's initiatives in some of the
25 instrumentation, you know, for replacing analog instrumentation so it's
26 more of a reliability issue. And we've used a lot of those products over

1 the years. Even there's initiatives in more effective outage
2 management centers, you know, some technology that can be used for
3 command and control centers and electronic work packages and things
4 like that. So those type of initiatives, you know, are for long term
5 operations, not necessarily needed for subsequent license renewal but
6 for the long term operations. So we use a lot of those.

7 COMMISSIONER MAGWOOD: Ms. Bernhoft, did
8 you want to add anything to that just briefly?

9 MS. BERNHOFT: It will somewhat echo what you've
10 heard here is I would just identify that, you know, aging mechanisms
11 have basically been identified. Aging management programs exist to
12 help the licensee with the management of that.

13 You asked about what the long term or the long pole
14 would be, and it's the continued working on the mechanistic
15 understanding to do two things. One is, can we get better inspection
16 and repair techniques, more timely inspection and repair techniques?
17 And also mitigation strategies, like stress relieving or, you know, better
18 chemistry to help with the economics and the safety of the long term
19 operations.

20 COMMISSIONER MAGWOOD: Thank you. Let me
21 spend my last minute and a half with David Lochbaum. Always
22 appreciate David's slides being shorter. That's always easier to
23 absorb the message.

24 One thing, first, let me thank you for, I think it was your
25 Slide 3 where you make the very important broad point which is, you
26 know, reactors can operate long term if they're properly maintained, but

1 if not properly maintained they can't operate even in the short period.
2 That's something, I think, is at the very basis of how we approached this
3 issue.

4 And you raise what's a very important issue about the
5 current licensing basis, and you sort of spoke to the issue but you didn't
6 really propose a particular path forward on that. Do you have a
7 thought?

8 MR. LOCHBAUM: Well, I think the first thing I'd
9 recommend is do a lessons learned on Fort Calhoun, because there
10 were a lot of fundamental issues identified there that weren't caught
11 early on by the oversight program.

12 I'm not saying all of those should have been caught by
13 the oversight program, but perhaps some of those should have been
14 caught earlier. So revisions to the oversight program, the ROP, what it
15 does and how it does it might come out of that lessons learned at Fort
16 Calhoun. There was a pretty good list of the NRC's restart checklist in
17 the licensee's own action, so start that as, and should this trigger any
18 changes in the ROP?

19 COMMISSIONER MAGWOOD: I think that's a very
20 fair question and I think it's one that, I'll bring this up at the staff, and I
21 think it is a conversation the EDO and I have had in the past because of
22 Fort Calhoun.

23 And, well, I'll defer and let the staff kind of respond to
24 that first then we'll chat about it some more. But I appreciate you
25 bringing up that issue. I think it's a very important issue. Thank you,
26 Chairman.

1 CHAIRMAN MACFARLANE: Thank you.

2 Commissioner Ostendorff?

3 COMMISSIONER OSTENDORFF: Thank you,
4 Chairman, and thank you all for your presentations. I'm going to start
5 off at this end of the table. Mr. Reister, I'll start off with you. I'm
6 interested in what is the current DOE knowledge base as to the
7 projected life of a reactor pressure vessel?

8 MR. REISTER: Well, the current basis is based on a
9 projection that we use projecting the, using the Charpy V-notch
10 samples that project how long the reference transition temperature will
11 shift over time and radiation. There's additional research being done
12 as part of our program to see if those projected embrittlements pan out,
13 maintain the same trend beyond 60 years.

14 And so I think that question is still being evaluated.
15 There's some prediction of some scientists that there might be other
16 phenomena that would become dominant in those out-years, and some
17 people have called them late blooming phases. Basically some of the
18 non-copper elements in the reactor pressure vessel material would
19 create, would migrate to areas and cause embrittlement that would
20 become more noticeable in longer term operation. But that is yet to be
21 demonstrated.

22 So we have a program that looks at, well, we work with
23 the industry both getting samples out for that time period and also
24 looking at model materials doing --

25 COMMISSIONER OSTENDORFF: So is there data
26 that supports an 80-year lifetime for a reactor pressure vessel?

1 MR. REISTER: Well, I think the data would be
2 collected in time before the plants would operate to that period of time.
3 So we don't have the data today, but we have a program to collect the
4 data well before they would operate in that time period.

5 COMMISSIONER OSTENDORFF: Okay, thank you.

6 Ms. Bernhoft, let me ask you, maybe a comment and a
7 question. I really had a chance before this meeting to review the EPRI
8 cable R&D program and I was very impressed with the rigor.

9 I also noted there's some knowledge gaps that you all
10 have identified but I wanted to commend that effort. I think it was very
11 helpful to understand the scope of existing programs to try to
12 understand some of the aging issues.

13 I know that in the submarine force we had, a whole
14 group stood up in the early 1980s called the SIMS performance
15 monitoring management team to look at aging of issues and to use
16 infrared sensing tomography techniques to check for degradation of
17 insulation and those kinds of issue. So I applaud the EPRI effort on
18 the cables.

19 Let me turn to a different topic area though. I'm trying
20 to get an understanding as to industry and vendor consensus on
21 projected service lives, let's say, for pumps and valves, just basic
22 mechanical components, not electrical.

23 Is there a consensus within EPRI or within the industry,
24 and if others want to add in on that please feel free to, that would
25 suggest that the original equipment manufacturers' data for this service
26 life is 40 years or 60 years or some other number? Is there much

1 confidence that that data exists as far as the applications in commercial
2 nuclear power plants?

3 MS. BERNHOFT: That's a large question to answer.
4 I think with a lot of the safety related components there's robustness in
5 the manufacturers' database.

6 Within EPRI we have a specific program area on
7 nuclear maintenance that gathers operating experience and works on
8 the technical basis for preventive maintenance programs for repairs
9 and replacements.

10 And so I think there's probably a better program
11 manager than myself to answer that, but we do have an extensive, and
12 we work closely with INPO with our equipment reliability group to gather
13 that type of data and share that operating experience.

14 COMMISSIONER OSTENDORFF: Okay. Did you
15 want to say something, Mr. Gallagher?

16 MR. GALLAGHER: Yes, Commissioner. I mean,
17 those particular components are in our asset management plan
18 because they're active components and it's all part of our asset
19 management. So we have pump inspection and replacement
20 schedules for all the major pieces of equipment, the reactor coolant
21 pumps, the condensate pumps, feedwater pumps, and they're all
22 different, you know, depending on what type of material it is or what
23 type of manufacturer it is. The main turbine, the generator, we do
24 rewind stator replacements. That type of thing. That's all part of our
25 long term operations and plant reliability.

26 COMMISSIONER OSTENDORFF: No, I understand

1 that. But is there consensus that there's a sufficient engineering
2 experience to predict accurately the service life of these components?

3 MR. GALLAGHER: Yes, on those we have
4 inspections and are able to keep on top of that type of equipment. I
5 mean that's a routine activity in all refueling outages.

6 COMMISSIONER OSTENDORFF: Okay, thank you.

7 Let me go to Mr. Earls. The SECY paper, and you
8 spent some time talking about it and industry concerns. And the staff's
9 Option 4 would require reporting by industry the operating experience in
10 aging on a plant basis as well as reporting on the effectiveness of aging
11 management programs.

12 Is that something -- but I think you mentioned that there
13 are other ways of doing that other than rulemaking, or are you opposed
14 to the Option 4 philosophical reporting requirement? Because our
15 staff has told me, and I'm just curious because, and we'll hear from
16 them later on. Our staff has told me that they don't really have a
17 regulatory footprint to require or to receive industry aging experience.

18 MR. EARLS: We don't believe that's the case. We
19 believe the staff does have a regulatory footprint. We believe there is
20 sufficient regulatory language to have us do it. In fact, the staff is
21 revising the inspection procedures as we speak to incorporate aging
22 management specifics into them. So we believe that's already there.

23 COMMISSIONER OSTENDORFF: What's the
24 specific regulatory footprint now that would require industry to report --

25 MR. EARLS: Well, Mike described it in that last flow
26 chart that he had on his slides. It shows the feedback mechanisms, so

1 the corrective action program.

2 If we identify an issue with an aging management
3 program that gets identified through the corrective action program
4 which then, you know, goes through a review process, and that is
5 subject to inspection. That Appendix B covers this type of thing. So
6 we believe that that will cover aging management programs.

7 COMMISSIONER OSTENDORFF: Okay, we're
8 running out of time, but I'll just comment that there's a different view
9 from our staff as to the applicability of what you're saying as far as
10 reporting back to the NRC, but I don't have time to go into that further.

11 But let me ask Mr. Gallagher. I need a 30-second or
12 less answer because I need to talk to Mr. Lochbaum here just a minute.
13 Give me one example in your Slide 6 that Mr. Earls refers to on the
14 feedback loop where you have industry OE that feeds into the block,
15 develop/modify aging management programs.

16 Give me one example that Exelon has experienced
17 where you've modified your aging management programs in response
18 to OE.

19 MR. GALLAGHER: Just to -- one major one. Alloy
20 600 program. And so that was based on operating experience.

21 And there was an industry initiative created, it was an
22 NEI 03-08. And that's what Sherry mentioned. And that's one major
23 program that was based on operating experience.

24 COMMISSIONER OSTENDORFF: Okay, thank you.
25 I appreciate that. Let me go to Mr. Lochbaum here. I agree with Mr.
26 Magwood's commentary on the clarity and the conciseness of your

1 presentation.

2 I just wanted -- the safety by queue example, your
3 second of the three examples, what kind of feedback have you gotten
4 from our staff on that? Because this probably not something new from
5 your perspective, this has been --

6 MR. LOCHBAUM: They told me they couldn't go
7 back to the make the earlier plants do it because the license renewal
8 rule was voluntary. They didn't -- nobody held a gun to their head was
9 almost the exact words.

10 But the original license was voluntary also. And yet
11 you still require people to meet 10 CFR 50. So you have the authority.
12 You have with the -- you may lack the wherewithal, but you could go
13 back and make the earlier plants do it.

14 I've heard from the industry that they're voluntarily
15 doing it because they have a large asset to protect. But safety dictates
16 that that same regulatory footprint exists no matter where you are on
17 the line.

18 COMMISSIONER OSTENDORFF: Okay. Anybody
19 response to the safety by queue comment by Mr. Lochbaum? Mr.
20 Earls?

21 MR. EARLS: Yes, I would like to respond to that. If
22 an issue is significant from a safety perspective, the staff has the
23 mechanism to impose that on the licensee. The example he's using is
24 the GALL. The GALL is the generic aging lessons learned.

25 Those issues, while they improve the process, are not
26 -- don't necessarily raise to that level. But if they do, the staff has the

1 means to impose that on plants.

2 And as we pointed out in the Alloy 600 example, Ginna
3 has implemented that program. You know, that is an active program at
4 Ginna.

5 So to suggest that you know, these earlier plants don't
6 do these things, that's not accurate.

7 COMMISSIONER OSTENDORFF: Okay.

8 MR. LOCHBAUM: Can I just get in here a little?

9 COMMISSIONER OSTENDORFF: Yeah.

10 MR. LOCHBAUM: Ginna may have voluntarily have
11 one, but if they stop doing it tomorrow, the staff would lack any
12 mechanism to force them to them to reinstate it. At Point Beach it's
13 part of the license renewal application. If they stop doing it, the NRC
14 can sanction them for doing it.

15 It's either right -- it can't be right in both cases.
16 Because they're so different.

17 COMMISSIONER OSTENDORFF: Okay. Thank
18 you very much.

19 CHAIRMAN MACFARLANE: Thank you. Okay.
20 The comments that you made at the previous questions Mr. Reister,
21 were a bit concerning and that's in part because my background as a
22 scientist, I spend a lot of time thinking about processes that occur over
23 time. Solid, solid reactions, that kind of thing.

24 And so I -- and with your comment on the pressure
25 vessel and whether you understand now what all the issues might be,
26 brings home to me the importance of whether we really do understand

1 all the processes that may affect the plant over that longer period of
2 time.

3 So do you have confidence that we understand all the
4 processes that -- and the mechanisms of aging out there?

5 MR. REISTER: Well I'd say that's part of our
6 research.

7 CHAIRMAN MACFARLANE: Right.

8 MR. REISTER: Is to get a better understanding of
9 those mechanisms. I would think, I would say that we haven't seen
10 any you know cliff edge effects in the 60 to 80 years that the effects
11 seem to follow a predictable evolution. And then --

12 CHAIRMAN MACFARLANE: But my question is are
13 there processes that you may not be aware of yet that may exist?

14 MR. REISTER: Well, I can't prove a negative. I can't
15 prove that there won't be any processes. But I would say --

16 CHAIRMAN MACFARLANE: Yes, the unknown
17 unknowns.

18 MR. REISTER: Right. But I would say that we have
19 -- we're doing the research to try to detect those in that time frame.
20 And we also have programs in the industry that I'm aware of where you
21 would be able to detect things that occurred in a time frame that you
22 could address the issue.

23 CHAIRMAN MACFARLANE: So who's doing the
24 research for you guys?

25 MR. REISTER: Well, most of the research we did is
26 National Labs.

1 CHAIRMAN MACFARLANE: National Labs?

2 MR. REISTER: Oak Ridge is the materials lab.

3 MS. BERNHOFT: And we would work either with the
4 National Labs, we work with a number of universities.

5 CHAIRMAN MACFARLANE: Okay, Ms. Bernhoft, are
6 there plants that no longer have material testing coupons in their
7 reactor vessels?

8 MS. BERNHOFT: There are some of the BWRs that
9 are.

10 CHAIRMAN MACFARLANE: Okay, and so how are
11 you going to characterize the long term situation of those particular
12 plants?

13 MS. BERNHOFT: With those particular situations, we
14 are going into a program now, you know there's the integrated
15 surveillance program right now out there for the 40 to 60 years that
16 adequately covers the BWRs.

17 Looking to the question of the 60 to 80, we're working
18 on a program right now with some of our researchers to compare or
19 baseline the data from the PWRs, it's to compare that to the BWRs.
20 The PWRs lead influence levels to the BWRs.

21 CHAIRMAN MACFARLANE: So how many plants
22 don't -- do we not have those coupons?

23 MS. BERNHOFT: That I couldn't answer for you right
24 now.

25 CHAIRMAN MACFARLANE: And you know, I guess
26 it just leads to a litany of questions. You know, how different are the

1 materials used, you know, in the different chemistries, the different
2 radiation fields, et cetera. Anyway.

3 MS. BERNHOFT: But we understand that. To
4 somewhat build on the point that Mr. Reister was making earlier, we
5 assessed through surveillance capsule removals. We plot that on
6 embrittlement trend correlations. We confirmed that by pulling the
7 Charpy V-notch test.

8 With some of the cases we are extending the interval
9 that a number of the capsules are in the vessel, recognizing that you
10 know, some of those capsules are already out. So we do have a
11 program formally established to extend the service life of some of those
12 capsules so we capture that lead factor for those capsules.

13 In other cases we're working with the industry right now
14 to reintroduce some surveillance capsules that have been previously
15 been removed so that we can get some additional exposure time on
16 those. And the plan is to stay ahead with the research and the
17 surveillance capsules ahead of where the operating plants are.

18 CHAIRMAN MACFARLANE: So question for you Mr.
19 Gallagher. You are concerned that rulemaking would take a long time.
20 But the first plant that would need subsequent license renewal
21 wouldn't need it until 2029. It seems we have an ample amount of
22 time here.

23 MR. GALLAGHER: Yeah, I think you know, as I said,
24 the industry would like you know, a sufficient time for energy planning.
25 Ideally you'd be submitting these applications about ten years out.

26 So that would be 2019 for the first plants. As an

1 industry we thought it was good to you know, get one in and get through
2 the process. Because you know even with no rule change, there will
3 be guidance change. The staff is working on guidance change for the
4 GALL, the SRP.

5 And then from there, the industry can be putting in the
6 applications about ten years out. And we think that that's an
7 appropriate time frame for energy planning.

8 CHAIRMAN MACFARLANE: I understand the energy
9 planning piece. I'm concerned that we don't have adequate data sets
10 to --

11 MR. GALLAGHER: Well, just on the data set, I mean
12 my understanding on the reactor vessel data, is that we do have
13 research data that shows material properties through 80 years. What
14 we will be doing is with reactor vessel surveillance coupons --

15 CHAIRMAN MACFARLANE: Those are predictions.
16 Those are extrapolations, right?

17 MR. GALLAGHER: Predictions and test reactor data,
18 okay.

19 CHAIRMAN MACFARLANE: And have we
20 characterized the uncertainties associated with extrapolating out that
21 far?

22 MR. GALLAGHER: And -- well that's part of the
23 extrapolations. So basically what we would as an industry what we
24 would be doing is having an integrated vessel surveillance program,
25 just like we have now.

26 Not all vessels were part of the -- had to have a capsule

1 for the existing program. Because there's groups and subsets of
2 reactors where you can you know, have appropriate numbers of
3 capsules in appropriate reactors to stay ahead of the curve for
4 evaluating the specimens.

5 So we would continue with a program that has to be
6 reviewed and approved by the staff. On what reactor will have what
7 specimens where and for how long, in accordance with Appendix H.
8 And then so we can show and stay ahead of the curve.

9 CHAIRMAN MACFARLANE: Okay. Mr. Earls, NEI's
10 position is that no change is necessary, right?

11 MR. EARLS: No rule change is necessary.

12 CHAIRMAN MACFARLANE: No rule change is
13 necessary.

14 MR. EARLS: We believe there is some value in
15 updating and developing some new guidance.

16 CHAIRMAN MACFARLANE: So does that -- okay, so
17 that means you do think that there are some lessons that we've learned
18 from the past 20 years of implementation of Part 54?

19 MR. EARLS: Oh absolutely, absolutely. I didn't
20 mean to suggest otherwise. What I was suggesting is that those
21 lessons would not drive us to a rulemaking. It does drive us to update
22 guidance, so for example the GALL update to reflect our current
23 understanding on the aging management program just an example.

24 We are working on additional guidance to strengthen
25 our assessment of the effectiveness of the amps at the plant. And also
26 strengthen our operating experience programs through the INPO

1 process that already exists.

2 CHAIRMAN MACFARLANE: Mr. Lochbaum. So,
3 first of all you know you wrote a post a little while ago called Nuclear
4 Plants and Nuclear Excuses, This is Getting Old, concerning oversight
5 of aging components, it's the aging effects on components.

6 Do you believe that the license renewal focus now on
7 aging effects on passive components is flawed? And I'm interested in
8 your thoughts about these issues of uncertainties projecting out
9 mechanisms that we understand now and those that we don't.

10 MR. LOCHBAUM: Well that blog post is actually
11 active components where the NRC staff identified current deficiencies
12 in its oversight of active components and nothing was done by senior
13 management. When you identify a problem and then pretend it
14 doesn't exist, that's not very good.

15 On the passive side, we think the aging management
16 programs are pretty sound. The scope of what they do and how they
17 look at it. The one exception might be in electrical equipment. The
18 long pole question that was asked earlier about pumps and valves.

19 CHAIRMAN MACFARLANE: Right.

20 MR. LOCHBAUM: The transformers and breakers
21 seem to be failing at a high rate and causing problems. They're
22 non-safety related equipment, but they challenge safety systems.

23 They don't seem to be covered adequately either by
24 amps or the NRC's license renewal rule. They seem to be failing at an
25 undue rate. There seems to be a gap there that needs to be closed.

26 So with that exception, the scope and thoroughness of

1 the aging management program seems to be okay. That's not our
2 issue, it's some of the collateral issues we see.

3 CHAIRMAN MACFARLANE: I see. So you don't see
4 that there's a real long pole in the tent going out to 80 years.

5 MR. LOCHBAUM: No, in fact the question earlier
6 about the reactor vessel and some of the things, the backstop for us, we
7 would point out to is the NRC's experience a decade ago with control
8 rod drive mechanism nozzle cracking.

9 That was unforeseen, but when it was detected at
10 Oconee, the NRC issued the bulletin in August of 2001 that required
11 everybody to address it. So we think there's backstops to address the
12 known, unknowns, or whatever -- whatever the right term is.

13 And it would be nice if we avoid those. We think there
14 are things in place to deal with them if they arise.

15 CHAIRMAN MACFARLANE: Okay, okay, thank you.
16 Commissioner Svinicki.

17 COMMISSIONER SVINICKI: Thank you all for your
18 presentations and actually Mr. Lochbaum I was going to begin kind of
19 on the point that you just made, so I appreciate that. Which I was
20 going to ask -- direct it to some of our licensee folks here, is that what is
21 the fundamental showing to the issue of license for the reactors that are
22 operating now, whether in their initial period of licensing, or their
23 extended period of operations?

24 Is the showing in order to be granted a license that you
25 come in with the absolutely high confidence data that every component
26 is to last X number of years of the terms of the license?

1 Or is the fundamental reliance for issuance of a license
2 on the oversight program and then the mechanisms to address the
3 unknown unknowns or unexpected degradation that should come in?

4 MR. GALLAGHER: Yes Commissioner. Yes, the
5 rule is actually that we don't have to prove that certain equipment you
6 know, lasts a certain period of time, 80 years whatever. We have to
7 have the programs in place to manage the aging before the loss of
8 intended function. And that's what the rule is.

9 So now you do in some -- for some equipment, you do
10 in the time limit aging analysis, you do do projections. And based on
11 the projections, you can either you know, show that you are projected
12 through the 80 year period, or you have a program in place to manage it
13 in the period of extended operation.

14 So it's more of a program implementation to make sure
15 we have the right programs, right inspections in place to manage the
16 aging.

17 COMMISSIONER SVINICKI: So in light of that
18 answer and Mr. Earls' response to an earlier question about the staff's
19 assertion that they have no regulatory reach into looking at problems
20 related to the aging of components. And then also even Mr.
21 Lochbaum's statement of you know, how in using the control rod drive
22 mechanism as an example of how we might have an unforeseen
23 emergent issue, and the regulatory tools that we have to address that,
24 I'm more than a little puzzled over an assertion that the NRC does not
25 have regulatory reach into addressing these problems.

26 Now if the staff wants something specifically labeled

1 as oversight of aging management. But I -- if I take aging
2 management not as a program, but just in lower case as you know,
3 looking at phenomena and degradation, I'm not aware of any area
4 where the NRC, if there were an emergent problem, wouldn't be able to
5 reach that and require a regulatory response.

6 So if it's that we're not getting it labeled under the right
7 term, I you know, frankly think that that's the kind of you know,
8 bureaucratic fly specking that NRC is often accused of.

9 So I look forward to exploring that with the staff. I
10 don't know what aspects of looking at safety significant aging
11 phenomena and degradation that we would not be able to compel a
12 response to.

13 So I'm just very puzzled by that. But on the research
14 and development program, based on Commissioner Magwood's
15 comments, you know that's a long term operations has been looked at
16 for a very long time.

17 Could anyone, either this would principally be operator
18 or DOE. Could you talk about how over perhaps even the decades
19 that that work has been going on, is there a feedback mechanism as
20 you look at a certain phenomena, if you find that it is even more
21 significant than you thought? Has there been a consistent feedback
22 into the R&D program of work over time so that you are looking at what
23 is or isn't more or less significant.

24 And then using that to tailor the programs going
25 forward. And then how also does plant, not just the research feedback
26 group, but OE, operating experience from the plant, how is that fed into

1 your programs?

2 MS. BERNHOFT: Yeah, that's a very good question.
3 On the overheads I talked about what we called our materials
4 degradation matrix. I could urge you to look at that. It is publically
5 available.

6 It's a very extensive database. We go through each
7 metals component. You know down one column, we go across the
8 top. We've identified what we feel could be all the possible aging
9 actors on that.

10 And then we sit down on a consistent basis, it's a living
11 program that's routinely updated. We take the operating experience
12 through our issue programs. Some of them meet two or three time a
13 year.

14 We get all that operating experience, not just the U.S.,
15 but international, fed in through our issue programs. We sit down
16 formally once a year. We look at that materials degradation matrix.

17 We have the operating experience. We have the
18 researchers with the research results. And we also bring in
19 international experts, so there's also some expert solicitation process.
20 We go through and we update that materials degradation matrix.

21 In 2010, looking forward to this, you know the
22 possibility of supporting subsequent license renewal. We actually
23 went through and we reevaluated that entire matrix with what we called
24 LTO flags.

25 So if you go in and you pull that up online, you're going
26 to see where there's a little LTO flag where we pose the question, is

1 there additional investigation that needs to be done on this aging
2 mechanism for this component for 60 to 80 years?

3 From there what we do is we have what we call our
4 issue management tables. And that specifically looks at you know, the
5 safety significance. You know the gaps in possible knowledge. And
6 then we prioritize the research based on that.

7 And that's what we take back through to our different
8 utility members and advisory committees. So when we get to our
9 issue management meetings you know, two or three times a year.
10 We're briefing out operating experience and we're briefing out research
11 results. And where we line up with our issue management tables.

12 COMMISSIONER SVINICKI: So in terms of
13 emergent materials phenomena in the plants, it sounds like there's a
14 fairly frequent and direct feedback loop for you to incorporate that into
15 planning and programs. I'm sure it takes a little bit of time to get the
16 research started.

17 But it sounds like at least the feedback loop is pretty
18 immediate.

19 MS. BERNHOFT: Yes, we have the feedback loop,
20 that's the formal process. We always are prepared to handle
21 emergent issues. And that really comes under the governance of the
22 NEI 03-08 initiative.

23 And a big part of that is the operating experience
24 exchange. When that happens, we have international phone calls with
25 the researchers, the utilities involved, and we tie in NRC management.
26 And we brief them on you know, what we're seeing and what actions

1 we're taking.

2 COMMISSIONER SVINICKI: Thank you. My last
3 question would get a little bit to the history. I think at least two of you
4 talked about the NRC's initial experience with license renewal. It was
5 a bit of a failure, I'll use that, I know it's a harsh term. But there was a
6 kind of a -- they went back to the drawing board.

7 My understanding of that history is that it was
8 principally a problem of scope in that as they worked on the first couple
9 of pilots, it was discovered that the scope of license renewal needed to
10 be calibrated very specifically not to become a dual or overlapping
11 system with the ongoing oversight of operating plants.

12 And therefore, if you have secondary reporting
13 mechanisms, a whole separate schema for inspection of aging,
14 fundamentally you would have NRC with two systems. And that
15 becomes somewhat unmanageable if there is, I think the
16 acknowledgment was if there was something missing that you
17 discovered that you needed for aging management, it is likely you
18 needed it right now for ongoing operations. There were not -- you
19 know, if something was safety significant on 40 years plus one day, it
20 was likely safety significant right now.

21 So do you think that in Option 4 there is the potential for
22 unlearning that lesson and running afoul of that if you're going to have a
23 separate additional oversight system for flex equipment or something
24 like that under aging management, in addition to any to any oversight
25 we have in the ROP?

26 MR. EARLS: Yeah, I think you're absolutely correct.

1 And that is a concern that we have that we see what appears to be a
2 push to try to set up separate systems.

3 I'll use the operating experience as an example. You
4 know, we have a very extensive operating experience that captures a
5 lot of different types of material and equipment information. Aging
6 management is captured in there. We're going to strengthen how it's
7 captured. But it is captured in there.

8 We're concerned that we will be pushed to establish a
9 separate license renewal operating experience process. And so then
10 you have the question of well, which program is it in? And then it gets
11 confusing.

12 So yes, I think that potential absolutely exists out there.
13 And we are concerned with it. We think a better approach is to
14 integrate it into the existing processes as I mentioned earlier. We
15 believe the staff is pursuing that with the incorporation of aging
16 management into existent procedures.

17 COMMISSIONER SVINICKI: Well I mean at the end
18 of the day it's going to be the resident inspector for all. So I don't want
19 him or her walking around with their procedure for inspection on the
20 aging management side. And then you know, they go back on
21 Wednesday and they look at it for current operation.

22 So I find myself, I'll let David, I know he wanted to add
23 a point here. But I find myself fundamentally, I think, in agreement with
24 Mr. Lochbaum in that if there's some gap in license renewal, I'd like to
25 address it now. I don't want to address it for 60 to 80.

26 I mean I think that if case can be made that something

1 needs to be looked at, I would be advocating that we look at it now.
2 Whereas a matter of fact, not just in the license renewal, the 40 to 60, I
3 would advocate that we look at it under the ROP.

4 So David did you want to add something?

5 MR. LOCHBAUM: Just on that, the last point about
6 there is a potential for redundancy. But one of the things I value in the
7 reactor oversight process, is the periodic reassessments.

8 So that if there was redundancy put in through this
9 process, at some point the overlap would be identified and either kept in
10 one place, or eliminated in the other to try to reduce it. Because the
11 base line inspection program tries to be a zero sum game. So if
12 there's anything added, it has to be taken off somewhere else.

13 So there is a potential for being introduced, but there's
14 also the safety net of it being caught and fixed whatever is most
15 appropriate down the road.

16 COMMISSIONER SVINICKI: Okay, thank you.
17 Thank you Chairman.

18 CHAIRMAN MACFARLANE: Commissioner
19 Apostolakis.

20 COMMISSIONER APOSTOLAKIS: Thank you
21 Chairman. The DOE program with others, that you talked about Mr.
22 Reister, on the slide something, nine, you talk about risk informed
23 safety margin characterization. Now I don't know what these terms
24 mean, okay, let me start with that.

25 We hear about safety margins a lot. There was an
26 earthquake and North Anna survived. It was greater than the SSE

1 because of the margin that's available.

2 And now we have the reevaluation project, the seismic
3 reevaluation, and again the margins are becoming important. We
4 have never quantified the margins.

5 Is this element of this project going to help me
6 understand what kinds of margins we have? What is it that you're
7 characterizing? All I see here is computer programs that do
8 thermohydraulics integration and so on. But am I going to understand
9 how much margin I have at the plant if I use these tools?

10 MR. REISTER: Well, it's geared toward a better
11 understanding of what the safety margin would be. And so the idea is
12 that the analysis gives you a probability distribution of what that
13 scenario was looking at compared to what it would be. It's also a
14 probably of distribution of your ability to withstand that.

15 COMMISSIONER APOSTOLAKIS: So you would do
16 that? This program does this?

17 MR. REISTER: Yes. Yes. That's the idea. And so
18 you would understand what those probability distributions look like and
19 how far apart they are. And that would be the safety margin. Those --
20 the difference between those two probabilities of an outcome and your
21 ability to withstand that load.

22 COMMISSIONER APOSTOLAKIS: Well in PRA
23 space, we are really quantifying defense in depth. I mean you know,
24 redundancy. I have a system with two trains. I need only one, so I do
25 the calculations and so we develop the accident sequences that way.

26 We don't take into account any margins there. We

1 make assumptions you know, if I lose one steam generator I'm done
2 and so on.

3 Am I understand that now I can take one accident
4 sequence and say well gee, even if I lose one train, I really have to ask
5 how much of the train have I lost. I mean what is the flow rate and so
6 on. I haven't really lost it 100 percent.

7 So there is an additional probability that the thing -- that
8 the core will be saved. Is that something we can do with these results?
9 Or is something for the future?

10 MR. REISTER: That's exactly what this methodology
11 would do. Is you would have -- RELAP-7 would be the high fidelity
12 plant simulator that you would run your scenario through. And then
13 what happens during that scenario, the events, like whether a pump
14 runs or not runs, would be based on probability distribution.

15 And you would run that scenario maybe ten thousand
16 times, and all the things that happen during that scenario, within the
17 bounds of that scenario would be driven by probability distributions.
18 And so you would get a probability distribution of the outcome.

19 COMMISSIONER APOSTOLAKIS: That's extremely
20 ambitious. Probably will be irrelevant to the 80 to 100 subsequent,
21 subsequent license renewal. I don't see anything.

22 Anyway, but there is a bigger issue here that bothers
23 some of us. The whole discussion today, and the license renewal
24 activities for 40 to 60 focused on aging.

25 Now it is likely that if we approve 60 to 80 extensions,
26 we may have designs that will be 90 years old during that period. And

1 I don't know how we would explain to the public that these designs, 90
2 year old design, 100 year old design, are still safe to operate because
3 we licensed them back in the '60s the first time around.

4 Don't we need more convincing arguments then just
5 saying we're managing aging effects? Some better holistic approach
6 perhaps that will convince some of the technical people, but maybe the
7 public, that indeed these designs deserve to be in operation.

8 Is that a bigger question? And why should we say
9 well gee, the Commission decided back in 1991 that these are the
10 principles. Well yeah, I mean they are not in the U.S. Constitution.
11 Principles can change.

12 So -- and I don't know that the Commission at that time
13 was thinking in terms of 90 year old designs. Is anybody else
14 concerned about this? I mean if we just say no, we look at the aging
15 and we have a great oversight process. So you know these plants can
16 operate for 90, 100, 200 years?

17 I mean will you buy a car that was designed in '64?

18 MR. GALLAGHER: I might. I might.

19 COMMISSIONER APOSTOLAKIS: Maybe you
20 would, maybe you would, okay. It's an antique, okay.

21 MR. GALLAGHER: Well Commissioner, I mean my
22 response is that the license renewal rule is just one rule of a regulatory
23 framework. So I mean as you know, we have probably the most
24 rigorous safety standards of any industrial application. And we need to
25 meet those safety standards everyday.

26 So what we would be communicating to our

1 stakeholders, is that we you know, safety operate the plant. We
2 maintain it. And we have to meet very, very high safety standards.
3 And we will and we do.

4 The aging is just a piece of that.

5 COMMISSIONER APOSTOLAKIS: But Mr.
6 Gallagher, six years ago, you would have said the same thing. And
7 then Fukushima happens. And we find out, oh my God. We never
8 really looked at the flooding again.

9 We licensed them decades ago, and now we have to
10 go back and develop a methodology for doing flood analysis. So there
11 are certain things that maybe are done once. And then we don't look
12 at them.

13 And I mean the rules you mentioned, yes sure. I
14 mean we have a very rigorous regulatory system. But I don't know to
15 what the system is looking at the global picture.

16 MR. GALLAGHER: Well I guess what I'm saying is
17 that the global picture are all the safety standards. And that's the
18 current licensing basis. That's done on an ongoing basis.

19 So the aging, which we're subject of depth, is you
20 know, a narrow --

21 COMMISSIONER APOSTOLAKIS: I appreciate that
22 point. And I appreciate --

23 MR. GALLAGHER: Also the thing with Fukushima,
24 then there's different things that occur. And the safety standards
25 change. And we implement those.

26 COMMISSIONER APOSTOLAKIS: After an accident.

1 MR. GALLAGHER: In that particular case.

2 COMMISSIONER APOSTOLAKIS: Yeah, in that
3 case. So do you think that's a convincing argument? You meet our
4 regulations, therefore you're safe enough?

5 MR. EARLS: Well I think I would add that you know,
6 when you pose that question, you pose it in a macro prospective. If I
7 look at the silhouette of the plant, yes it is, it is -- looks like what was
8 designed back in whatever '50, '60, '70.

9 But if you look at the components, the systems, we
10 learn. If you look at the materials that are in some of our key
11 components today, they are nowhere near the same design or type that
12 was installed originally.

13 So we learn. So there is an update of the design as
14 we learn. Again, this is an important aspect of our operating
15 experience. The Alloy 600 program, you know, there's a recognition
16 that there's an issue with that design. That's upgrade.

17 So I think if you look at it not just at a macro
18 perspective, but at a micro, there have been upgrades. These are not
19 you know, old, 50 year old plants. That you walk into these plants,
20 you've all walked into the plants. They don't look like a 50 year old
21 plant.

22 COMMISSIONER APOSTOLAKIS: And I don't
23 dispute that fact. I'm not saying that there haven't been upgrades and
24 so on. But again, I don't know that we're communicating very well.

25 I was visiting a plant maybe three or four months ago.
26 And one of the things that really convinced me that they knew what they

1 were doing, is when they showed a curve of the core damage frequency
2 over the years.

3 And what actually physical changes they had done to
4 the plant. And how these were reflected in the year 2003 and the
5 curve goes down. That macro level, I think goes a long way towards
6 convincing somebody that something that was designed and built a
7 long time ago, does deserve to operate now, or ten years from now.

8 And I think that's missing from this proposed approach.
9 Again, I appreciate that you know, if you meet our regulations you're
10 safe enough sure. But I wonder how convincing that is. And if you
11 have a good aging management program, it's great even though the
12 design was done in 1955. I guess I run out of time.

13 MR. LOCHBAUM: Well there's also the silver lining of
14 there's 20 more years to come into compliance with the fire protection
15 regulations to promote the Commission briefing of June 4th. So
16 increases the chances that you get there. So we're in favor of that.

17 COMMISSIONER APOSTOLAKIS: Very positive Mr.
18 Lochbaum.

19 CHAIRMAN MACFARLANE: Any further questions?

20 COMMISSIONER SVINICKI: Could I respond to
21 George's question? I just -- I was listening really, really closely. And
22 although the question appears to more -- to be about the science of
23 persuasion as opposed to the science of nuclear technology, I heard
24 you pose the question, I don't know, we'll see the transcript eventually.

25 I think you said when the public says should something
26 80 years old be operating, and the answer is, well we're managing

1 aging and aging phenomena, and if it isn't safe we'll close it down.
2 And you said is that the right response?

3 It's hard for me to think of a more germane and
4 relevant answer to the question is, should this old thing be operating, to
5 say we're looking very, very closely at aging and materials degradation.
6 And if we find something there, we'll address it or it won't operate.

7 I don't know what more relevant answer to that you
8 could give.

9 COMMISSIONER APOSTOLAKIS: We can't turn this
10 into a debate here, right? So, I don't find that a convincing argument.

11 CHAIRMAN MACFARLANE: Any further comments?
12 No. All right, we will take a quick five minute break.

13 (Whereupon, the foregoing matter went
14 off the record at 10:38 a.m. and went
15 back on the record at 10:47 a.m.)

16 CHAIRMAN MACFARLANE: Okay. So we will now
17 start the second panel and hear from the NRC staff. And I'm going to
18 turn it over to our Executive Director for Operations, Mark Satorius.

19 MR. SATORIUS: Thank you Chairman. And good
20 morning Chairman, good morning Commissioners.

21 The staff today will be briefing you and provide us
22 overviews on it's efforts to be prepared for the receipt of the first
23 subsequent license renewal application, which I did not hear any
24 specific dates for the arrival of that application from the first panel. Our
25 understanding is 2018 is what industry has led us to believe that we
26 could expect that first application.

1 Staff is working very diligently to insure that they're
2 prepared for the receipt of that application. And just as diligently to
3 ensure that any potential applicant clearly understands the
4 requirements that need to be met.

5 So with that, I'll ask John Lubinski to start the staff's
6 presentation. John.

7 MR. LUBINSKI: Thank you Mark. As stated, I'm
8 John Lubinski, I'm the Director of the Division of License Renewal in our
9 Office of Nuclear Reactor Regulation.

10 With me for the briefing this morning I also have Bo
11 Pham to my left. He's the Branch Chief in Division of License Renewal
12 in NRR, responsible for subsequent license renewal regulations.

13 Also Dr. Mirela Gavrilas, who's our Acting Deputy
14 Director of the Division of Engineering in our Office of Regulatory
15 Research.

16 This morning I will provide an overview of the licensing
17 and oversight during the first 60 years of operation, which includes the
18 first license renewal period. And how these processes support the
19 recommendations we're making for the subsequent license renewal
20 period, that is beyond 60 years.

21 To do that, the staff reviewed the policies, regulations,
22 guidance and technical information to determine if there was any
23 changes needed to our regulatory framework or technical framework to
24 support the submission and review of the first subsequent license
25 renewal application.

26 The staff believes that number one is, the policies and

1 principles supporting license renewal are appropriate for subsequent
2 license renewal. We did review those again and determined that we
3 believe they're appropriate.

4 Secondly, we believe based on those principles and
5 issues unique to subsequent license renewal, that regulatory changes
6 should be considered. And we included those in SECY-14-0016 and
7 provided that to the Commission in January. Bo Pham will talk about
8 that during his presentation.

9 We also believe we need to continue to review of the
10 technical issues that support aging management programs needed
11 beyond 60 years. Dr. Mirela Gavrilas will talk about during her
12 presentation this morning.

13 And then finally we believe both in the technical areas
14 as well as in the regulatory area, regulatory guidance needs to be
15 updated.

16 I note that as part of license renewal and subsequent
17 license renewal, we do both a safety review and environmental review.
18 Since we have recommended no changes to the environmental review
19 process, we'll focus our presentation just on the safety side this
20 morning.

21 So in order to discuss license renewal in general, I
22 think we ought to talk about plant operations during the first 40 years.
23 And I believe right now to insure safety, the NRC's current regulatory
24 framework and processes are appropriate and adequate.

25 This is due to the inner relationship and the feedback
26 between our regulations, our licensing, and our oversight activities.

1 And they basically feed each other to insure that we have adequate
2 protection of public health and safety every time during plant
3 operations.

4 We don't just do it at a certain time frame. It's
5 everyday we make sure we have safety at the plants.

6 Part of the premise for this is, when we identify a
7 potential safety or security issue, we address it when it's identified.
8 We don't wait until a certain time frame and only do it every five years,
9 ten years, 40 years, 20 years.

10 Instead we do it once identified. And we take care of
11 those issues either on a plant specific basis or a generic basis when we
12 believe they apply to more than one plant.

13 We also believe the licensing basis continues to be
14 enhanced over the years. There was a little bit of discussion about this
15 this morning. Licensees are required to maintain their licensing basis.
16 And they make changes to those licensing basis.

17 Some of them are voluntary, some of them are
18 mandatory. Some of the voluntary changes are done as part of 50.59
19 evaluations that do not require NRC prior approval. Examples, when
20 they replace pumps, valves, steam generators. When they put a new
21 one in, it is a more robust system.

22 And it becomes part of their new licensing basis. And
23 those changes would be subject to regulatory requirements when
24 changes are made to decrease, if they wanted to decrease back that
25 licensing basis.

26 Also, there's voluntary programs that require our

1 review. Such as NFP 805 application reviews as well as power
2 uprates. Again, the safety profile of the plant gets better based on
3 these changes and enhancements that are made to the plant, and it
4 becomes part of their licensing basis.

5 And then finally, over the years when we identify issues
6 that need to be addressed based on safety issues, we may issue orders
7 and mandate those changes. We've done that in response to Three
8 Mile Island as well as Fukushima in requiring those enhancements.
9 And that becomes part of the licensing basis.

10 Aging management is not something unique to license
11 renewal. It occurs during the first 40 years. You heard this morning, it
12 started on day one. And that's insured through our regulations, our
13 licensing and our oversight activities.

14 And the purpose of the aging management program is,
15 it requires plants to implement processes and techniques capable of
16 identifying the effects of aging before they impact safety. And to take
17 any necessary actions once this is identified. And that could include
18 mitigation of the effect, a repair or a natural replacement.

19 So what we look for is there an indicator that we're
20 having a safety issue at the plant? And let's identify the corrective
21 actions before it actually becomes a safety issue. Next slide.

22 For license renewal, that is the 40 to 60 year period,
23 this slide includes a -- the two fundamental safety principles. The first
24 is with the exception of the detrimental effects of aging, the existing
25 regulatory process is adequate for plants -- for safe plant operation.

26 And this includes the continued licensing and oversight

1 activities that I discussed. And it includes those programs identifying
2 and addressing any potential safety issues when they occur, not waiting
3 for license renewal.

4 We also look at aging management programs as I said.
5 And we determine from the standpoint of have -- what the programs
6 provided by licensees. Are they adequate to address aging?

7 That's part of the first license renewal. Some of those
8 programs are identical to what they've done during the first 40 years,
9 because it was very well known what the degradation mechanism is
10 and can continue. Others required enhancement because of aging
11 beyond 40. And then others required new programs to be put in place
12 for inspection and replacement activities.

13 The second principle is that each plant must maintain
14 it's licensing basis. And as I discussed, this licensing basis at the time
15 of the license renewal is not the same as it was at initial licensing. The
16 plant has made enhancements and it's made upgrades and that
17 becomes part of their new licensing basis.

18 These principles were established when we developed
19 10 CFR Part 54 for the application process for license renewal. We did
20 review those and we believe they're adequate to support license
21 renewal today and continuing forward.

22 We note that plants enter the period of extended
23 operation that is beyond 40 years, starting in 2009 and collectively, we
24 have more than 56 reactor years of operations beyond 40 years.

25 So for subsequent license renewal, as Mark said, it
26 was not mentioned a time frame this morning. But the industry has

1 indicated to us that they plan to submit their first application in 2018.
2 Top rate beyond 60 years.

3 We believe that we need to be prepared for receipt of
4 that application with guidance and regulations. So to do that, we
5 reexamined the policies and principles for license renewal. We
6 determined that the main principles remain valid for subsequent license
7 renewal.

8 We then evaluated our regulatory frame work to
9 determine whether regulatory changes were needed to address these
10 principles. And what we determined is there were some changes
11 needed either because they met these principles, or they were unique
12 to the period beyond 60 years, or needed to maintain safety beyond 60
13 years.

14 We've included those in SECY-14-0016 for the
15 Commission's consideration. And in that paper, we're requesting
16 Commission approval that the principles for license renewal continue to
17 remain valid for subsequent license renewal.

18 And that in order to have a strong, clear alignment
19 between our regulations, guidance and implementation activities, that
20 the staff initiate a rulemaking process which would commence with the
21 development of a regulatory basis for those changes.

22 I will now turn to Bo Pham to discuss those regulatory
23 changes.

24 MR. PHAM: Thank you John. Good morning. The
25 SECY paper contains four options for the Commission to consider.
26 Option 4 includes the implementation of Options 2 and 3 with it. And

1 Option 1 offers no changes to the rule.

2 I am going to focus most of my comments on Option 4
3 because that's the option that we have recommended in the SECY
4 paper. And as part of my presentation, I will also briefly talk about the
5 non-concurrence everybody was doing at the development of our
6 SECY paper. Next slide please.

7 The essence of what Option 4 proposes are two new
8 requirements. The first is a requirement for licensees to take actions
9 to insure the effectiveness of the aging management program during
10 the 60 to 80 year time frame. And the other is the limitation or
11 reduction of time prior to submittal of an application for subsequent
12 license renewal.

13 On this slide with respect the aging management
14 program effectiveness aspect of those two requirements, the staff is
15 asking that we consider a requirement for licensees to take specific
16 actions per the bullets in the slide here to insure effectiveness of the
17 aging management program.

18 And one of the drivers for this recommendation is the
19 result of our insight, the insights that we gain from conducting three of
20 the aging management program effectiveness audits at facilities that
21 were already in the period of extended operation.

22 And part of the findings that we found through those
23 audits is, in many cases, the documentation did not always lend itself
24 for the staff to get a good understanding or trace how aging
25 management programs were maintained, modified, changed over time
26 based on any implementation or operating experience that the industry

1 or the plants had undergone.

2 Therefore, the staff feels that the suggested rule
3 change to insure a consistent and a timely feedback to alert the NRC as
4 well as the industry regarding any changes to the aging effects or a
5 degradation mechanism.

6 It would also provide for reasonable assurance for safe
7 operation in the 60 to 80 year time frame in that it insures a continuing
8 focus on aging management and the safety impacts, as well as the
9 effectiveness and efficiency and ability for the NRC to provide oversight
10 and conduct inspection activities.

11 But most importantly, and I think this came up earlier, is
12 that it provides an enforcement mechanism to insure aging
13 management program effectiveness is maintained during the 60 to 80
14 year time frame. And without this, the staff is left to relay on volunteer
15 initiative by the industry.

16 So the -- for aging management effectiveness, there
17 are three components to this requirement that the staff is looking at.
18 The first is for the industry to, for the licensee to perform a self-
19 assessment of the effectiveness of the aging management program.

20 This type of assessment is not unprecedented. We
21 currently require it for the maintenance rule, for fire protection program
22 and the emergency preparedness programs.

23 We believe that the self-assessment will provide
24 valuable information to the licensee, the industry as well as the NRC so
25 as to inform future changes to revisions of the programs to continue to
26 maintain effectiveness of the aging management programs.

1 The second component of the requirement is for the
2 licensees to report operating experience related to aging degradation to
3 the NRC. This change would insure that the licensee's
4 self-assessment consider all the relevant aging concerns, whether
5 they're generic or plant specific and would help the staff and the
6 industry stay abreast of all the relevant operating experience.

7 And the last component would require licensees to
8 report certain changes of subsequent license renewal activities.
9 Changes to the aging management programs today are managed
10 under the requirements in the 10 CFR 50.59.

11 The staff is currently looking at the effectiveness of the
12 use of 50.59 for this particular purpose. And identifying any needs to
13 ask for additional document -- licensing basis documentation for
14 subsequent license renewal as well.

15 So the specific details of what needs to be in the
16 specific requirements, the staff is hoping to develop further as we are
17 able to further engage with these stakeholders as part of the rulemaking
18 process. At this point we are asking for Commission approval for us to
19 go forth and initiate the rulemaking so that we can have this
20 engagement. Next slide please.

21 Option 4 also considers a change in the time frame
22 before an application for subsequent license renewal can be submitted.
23 The current requirement allows for an applicant to submit its application
24 the day it enters the period of extended operation for the first license
25 renewal.

26 And the situation may not allow for a sufficient time for

1 the licensee to gain sufficient knowledge and lessons learned from
2 implementing the aging management program for its first license
3 renewal. And therefore the staff believes that there should be
4 additional sufficient time for the licensees to implement these aging
5 management programs during the first license renewal in order to
6 demonstrate the effectiveness of the aging management programs.

7 And this information will be critical to the staff's
8 assessment of the program effectiveness for subsequent license
9 renewal. So in order to address this, the staff is proposing that the rule
10 -- a rule change look at reducing the time frame from the current 20 year
11 that licensees are allowed to submit their application.

12 And as I indicated also, the details of specific time
13 frame, we're looking at will be further developed as we are able to get
14 into the rulemaking process. Next slide please.

15 While it wasn't a specific recommendation in the SECY
16 paper, Option 4 also had a discussion regarding the coordination
17 between subsequent license renewal activities with the current efforts
18 with Fukushima.

19 The reason this was included in the paper is that as
20 plants continue to operate further from their original license changes to
21 surrounding plant environments, such as the local water table,
22 meteorological patterns, or construction of nearby industrial facilities,
23 these changes could potentially differ from the plant's currently
24 licensing basis without a requirement to assess the impacts on the plant
25 safe operation.

26 However, in developing the paper, the staff also

1 acknowledged and made a determination that validation or verification
2 of such changes would be more appropriately handled under a broader
3 effort by the agency to address it as part of the Fukushima activities.

4 Nevertheless, any resulting licensing basis change
5 that results that comes out of the Fukushima activities could have an
6 impact on the applicants that come in for subsequent license renewal.
7 And therefore we wanted to make the note and acknowledge that the
8 activities between subsequent license renewal and Fukushima needs
9 to be closely coordinated in the future.

10 As previously indicated, Option 4 also includes the
11 suggested rule revisions for implementing Options 2 and 3 in the paper.
12 The last three bullets on this slide summarizes and highlights the
13 recommendations of those options.

14 For the sake of time and because some of the
15 presenters this morning covered it already, I will go ahead and just not
16 rehash the descriptions of those. Next slide please.

17 As you know, a non-concurrence was filed as part of
18 the staff -- in the process of the staff developing this SECY paper. It
19 requests that the paper include an option for the Commission to
20 consider requiring applicants for subsequent license renewal to include
21 an upgraded probabilistic risk assessment, also known as a PRA in
22 subsequent license renewal application.

23 As part of the staff's effort to review the current
24 regulatory frame work for license renewal, we considered many issues
25 as candidate issues for changes to Part 54, including this particular
26 issue of requiring PRA upgrades in subsequent renewal application.

1 We considered each of these issues against the
2 license renewal principles, whether the issue was unique to -- uniquely
3 relevant up to the period of extended operation from 60 to 80. And
4 whether the issue was needed to maintain safety for that period.

5 We then assess whether each of the issues could be
6 best addressed by the current regulatory process, by guidance
7 updates, or by actual changes to the current rule in Part 54 itself. And
8 while there may be benefits to the risk insights that can be provided by
9 an updated PRA in the application, the staff decided not to include this
10 option in the SECY paper for several reasons.

11 The first is that the PRA is not required to maintain
12 plant safety today. As currently intended, the PRA provides for risk
13 insights and identifying areas that may need more or less regulatory
14 focus and are used to supplement the staff's current traditional
15 deterministic approach in license renewal.

16 Second the use of the PRA is not an issue that's just
17 unique to license renewal. We believe that the benefits of using PRA
18 in identifying vulnerabilities or areas of additional inspection focus is
19 beneficial throughout the life of the plant and not just during the
20 operation beyond 60 years.

21 And finally, the license renewal applicants can use risk
22 insights into aging management programs activities today. The
23 statements of considerations from '91 and '95, as well as the
24 Commission's policy on PRA use has always encouraged the use of
25 PRA in developing and implementing aging management activities.

26 As an example of that, you know, one program that we

1 often see is the risk informed version of the inspection -- in service
2 inspection program that are credited as aging management programs
3 for our applications right now.

4 So this concludes my remarks for the regulatory frame
5 work that we looked at for license renewal. I'll now turn things over to
6 Dr. Mirela Gavrilas to discuss the ongoing research activities for
7 subsequent license renewal. Next slide please.

8 DR. GAVRILAS: Thank you Bo. The bulk of my
9 presentation is an overview of the important technical issues -- thank
10 you -- for which additional research is needed for subsequent license
11 renewal. I'd like to preface that discussion with a couple of comments
12 on the overarching staff efforts that led to the identification of these
13 issues. Next slide please.

14 While the industry has a responsibility for the resolution
15 of aging management issues, the staff has and will continue to perform
16 research to validate proposed industry solutions. This research is
17 primarily confirmatory in nature. And began with the nuclear plant
18 aging research program in the 1980s.

19 In 2008, the focus shifted on subsequent license
20 renewal. Specifically, we started accumulating and assimilating
21 information pertinent to light water reactors in their 60th through 80th
22 year of operation.

23 Technical staff throughout the agency has collated
24 domestic and international operating experience, laboratory work and
25 analytical methods. We participated in and hosted specialized
26 technical workshops in relevant disciplines. For example in 2012, the

1 staff, together with the Department of Energy, co-sponsored the Third
2 Nuclear Power Plant Life Management conference of the International
3 Atomic Energy Agency.

4 Also in the context of long term operations, we signed
5 memoranda of understanding with both the Department of Energy and
6 the Electric Power Research Institute to exchange mutually beneficial
7 information. We have been interacting regularly with both DOE and
8 EPRI on a broad range of technical issues relevant to subsequent
9 license renewal.

10 At the same time, the staff initiated specific activities to
11 ascertain what is needed to extend the technical basis beyond 60
12 years. One of the most important of these activities, and Bo
13 mentioned it already, was the recent evaluation of how aging
14 management programs were implemented at three plants. I'm going
15 to reiterate what Bo said.

16 The main conclusion of these effectiveness audits was
17 that while aging management programs have been incorporated in
18 plant procedures, the programs did not always document
19 enhancements. This suggests the need for a more systematic review
20 and assessment of the effectiveness of licensee aging management
21 programs as mentioned by Bo.

22 The effectiveness audits also identified the need to
23 better define what is meant by aging management program
24 effectiveness and inject more objective criteria into the definition. Next
25 slide please.

26 The summit of subsequent license renewal research to

1 date is the recently completed expanded materials degradation
2 assessment. The expanded assessment built on an earlier effort,
3 known as the proactive material degradation assessment, which was
4 documented first in 2007.

5 The word expanded refers to the fact that the current
6 work broadened the scope of work to inquiry beyond the reactor system
7 piping and vessel internals. The current work also extended a time
8 frame for the inquiry into examining material degradation scenarios up
9 to 80 years of operation.

10 The expanded materials degradation assessment was
11 cosponsored by the NRC and by the DOE under it's Light Water
12 Reactor Sustainability Program as mentioned by Rich Reister this
13 morning.

14 The assessment was conducted by 28 internationally
15 renowned experts who populated four technical panels. One for piping
16 and internals. The second for reactor pressure vessel. A third for
17 electrical cables. And a fourth for concrete structures.

18 To capture the breadth of expertise and experience,
19 the panelists also had diverse affiliations. They came from the
20 industry, academia, national labs and regulatory bodies. The panelists
21 used phenomena identification and ranking techniques to ascertain the
22 susceptibility associated with know degradation mechanisms.

23 Their assessment considers specific materials, the
24 operating conditions during service, as well as the loads to which
25 components or structures are subjected. The assessment represents
26 a snapshot of the state of knowledge, domestic and international, on

1 technical issues relevant to subsequent license renewal.

2 It also identifies areas of additional research necessary
3 to support subsequent license renewal applications. Next slide
4 please.

5 In the next four slides, I'm going to highlight some of
6 the important conclusions from the expanded materials degradation
7 assessment. Specifically, I will focus on high susceptibility
8 degradation scenarios.

9 High susceptibility means that the panelists think there
10 is a strong likelihood that degradation will occur within 80 years. The
11 panelists base their conclusion on both plant operating experience as
12 well as laboratory data.

13 Panelists also classified scenarios according to level of
14 knowledge. High knowledge means that we understand and can
15 reasonably predict the progression of degradation over the operational
16 period. Conversely, lower knowledge indicates that additional data or
17 better models are necessary.

18 The panelists focused strictly on phenomenology and
19 did not examine anything related to managing the degradation. The
20 staff is therefore reviewing the report to determine where aging
21 management research is also needed.

22 The piping and core internals panel concluded that the
23 technical community has a good understanding of primary water stress
24 corrosion cracking. While testing continues in this area, it is primarily
25 motivated by the use of newer materials.

26 Similarly, the panel concluded that we have a thorough

1 understanding of how standing water and impurities cause pitting and
2 microbially induced corrosion in balance of plant systems. The panel
3 agreed that significant gaps exist with regard to irradiation induced
4 degradation of the internals.

5 The staff shares the panel concerns because
6 irradiation effects mechanical properties in many ways, including
7 reducing toughness as well as causing cracking and swelling.
8 Irradiation assisted degradation contributed to the failure of the baffle
9 bolt depicted on the slide.

10 In addition, both neutron fluence and temperature
11 effect material response. And it is not clear that the combined effect is
12 additive. Furthermore, the internals cover a variety of materials and
13 the responses of these materials to irradiation varies.

14 Of most concern is the fact that current data, only cover
15 a relatively low fluence range. And that testing can only be
16 accelerated by a limited factor.

17 The staff and industry are embarked on an effort to
18 harvest and test materials from the decommissioned Zorita plant in
19 Spain, which will provide much needed information about the irradiation
20 effects at significantly higher fluences. Next slide please.

21 The reactor pressure vessel had the benefit of
22 operating experience and targeted research that accumulated over four
23 decades. The panel thus concluded that while neutron embrittlement,
24 once the high susceptibility classification, is also a topic on which we
25 have high knowledge.

26 Therefore, the staff's effort in this area are to maintain

1 a high degree of cognizance with regards to industry initiatives on
2 irrigation embrittlement surveillance at high exposure levels. The
3 picture on this slide shows an apparatus in a hot cell that was used for
4 testing surveillance specimens.

5 The staff is also engaged in consensus standard
6 activities that codify this large amount of technical information. Within
7 the reactor pressure vessel area, the only low knowledge scenario, is
8 that medium susceptibility and involves environmentally assisted
9 fatigue.

10 The staff is still studying what actions will need to be
11 resolved to address this gap. Next slide please.

12 A great deal of work has also been conducted in the
13 area of electrical cables. This work provided insights into how thermal
14 aging and irradiation effect long term cable performance.

15 Staff recognizes however, that additional work is
16 needed with regard to condition monitoring of cables. The staff is
17 conducting research at NIST and the University of Maryland on
18 indicators that can provide better confidence regarding performance of
19 cables under accident conditions.

20 To support this program, cables were harvested from
21 the decommissioning Zion plant, some of which are shown in the
22 picture on this slide. The industry is currently mapping service
23 conditions for the harvested cables.

24 Finally, less is known about the prolonged
25 submergence on low and medium voltage cables. The staff is working
26 with experts at the Sandia National Laboratories to strengthen it's

1 understanding of this scenario. Next slide please.

2 The assessment of concrete structures including the
3 containment building, spent fuel pool and cooling tower, considered
4 degradation of the concrete itself as well as any metallic
5 re-enforcements. The panel concluded that sufficient knowledge
6 exists about degradation caused by outdoor conditions such as
7 freeze/thaw damage.

8 However, while we understand the chemistry of
9 alkali-silica reactions, as seen at Seabrook on the picture on the slide,
10 more information is needed on the progression and structural impact of
11 this degradation mechanism.

12 Similarly, more needs to be known about the effect of
13 long term irradiation exposure. The staff is working with NIST and
14 National Laboratory experts to address these gaps.

15 DOE and industry are harvesting concrete specimens
16 from commercial and test reactors to better understand the effects of
17 realistic service conditions. DOE and industry are also exploring more
18 effective, non-destructive examination techniques for concrete structures.

19 I will conclude with a couple of summary thoughts. My
20 presentation covered some of the most important technical issues that
21 need to be addressed for renewing plant licenses beyond 60 years.

22 While significant research is underway, a lot still
23 remains to be done. The staff will continue to follow industry research.
24 As research results are provided to the staff by the industry, the staff will
25 scrutinize them for breadths and depths.

26 The industry results together with relevant

1 confirmatory staff research will be used to determine the completeness
2 and soundness of the technical basis for subsequent license renewal.

3 Thank you. And I'll turn it back to John.

4 MR. LUBINSKI: Thank you Mirela. In summary, as
5 we've stated, we've reviewed the two principles for license renewal and
6 we believe they provide an effective basis to insure safety for the
7 subsequent license renewal period.

8 We request the Commission approve the
9 recommendations to initiate rulemaking to support subsequent license
10 renewal. And the staff will continue the research to support the
11 development of effective aging management programs and
12 confirmatory research on the activities that are being performed by the
13 industry.

14 MR. SATORIUS: Thank you John. And with that,
15 Chairman we're a little over our time, so we'll go right to your questions
16 or any clarifications that we need to make.

17 CHAIRMAN MACFARLANE: Great. Thank you.
18 Commissioner Magwood.

19 COMMISSIONER MAGWOOD: Thank you
20 Chairman. Always thank the staff or their presentations and for the
21 various conversations they've had about the SECY paper.

22 Before getting into that, I wanted to chat with Mark just
23 for a moment about slide 10. Because it was -- it sort of struck -- it
24 struck my office as a little different to see such an exhaustive discussion
25 about a non-concurrence.

26 I guess my reaction to this was that it seemed a bit

1 unfair. You know a person on the staff puts forward a
2 non-concurrence and then you spend a page talking about why it's not
3 right. And I just felt that that was out of balance.

4 And I think it would have been better to give a very
5 short discussion about the fact that it was a non-concurrence and what
6 the staff's response was. But if you're going to provide such an
7 exhaustive discussion about it, I think it would have been fair to provide
8 the other side of the story.

9 So I -- it struck me as -- I don't want to use the work
10 inappropriate, but certainly out of balance.

11 MR. SATORIUS: I understand what your position is,
12 and we'll take for action as something we need to look at as we prepare
13 because we want to encourage the staff to feel free to come forward
14 with non-concurrences.

15 This one was a very carefully and well thought through.
16 And I studied it probably as much as I studied the Commission paper.

17 So I hear what you said, and will internalize that. And
18 do a better job next time.

19 COMMISSIONER MAGWOOD: I appreciate that.

20 So getting to the substance of the paper. Let me ask
21 -- let me start with a very broad question on this. Because you heard
22 the conversation with the previous panel and the industry
23 representatives put forward, very clearly their view that we don't really
24 need to do anything in a rulemaking sense.

25 But offered, and this was a little bit of the different story
26 that I think I've heard in the past. Offered that they did recognize that

1 there are some lessons learned and need to be absorbed and that can
2 be reabsorbed in guidance.

3 What do you think, if you were -- if the Commission
4 were to approve Option 1, which is essentially take no rulemaking
5 action. But have a very comprehensive review of guidance.

6 What is the largest loss in that approach?

7 MR. LUBINSKI: Thank you for the question. You
8 know number one is if we're putting Option 1 before the Commission,
9 we think it is something that could be viable and could work. What will
10 we lose?

11 I think what we would lose really is the transparency of
12 going forward with changes that are made in the regulatory processes.
13 We recommended going through to rulemaking so that we could get all
14 external stakeholder input and provide a reasonable basis for whether
15 or not to go forward with those changes or not.

16 So we're asking for the initiation of that process go get
17 those external -- external input. As we go through guidance, we would
18 certainly seek external input on the guidance. But we believe the
19 process for rulemaking is a more established, more transparent, more
20 predictable for licensees.

21 As you've heard this morning from the industry, they're
22 looking for some predictability so that they can plan whether to come in
23 for subsequent license renewal. So we think rulemaking gives that
24 predictability.

25 And then finally is, if we were to go through and
26 implement some of this through guidance, we would not have the clear

1 regulatory footprint, the regulatory hook to implement some of these
2 requirements if the industry did not voluntarily choose to implement
3 some of these activities.

4 If they did choose to implement this, these activities,
5 and they were done as we all agreed, everything would be fine. But
6 we would not have that assurance.

7 COMMISSIONER MAGWOOD: For example, the
8 reporting requirements, is that one?

9 MR. LUBINSKI: For reporting requirements, if I can
10 expand on that just for a minute, is that when we looked at the graph
11 and I'll say the flow chart that Mr. Gallagher showed this morning from
12 the feedback mechanism, we do believe that works effectively.

13 And that is not voluntary. That is something that is
14 required by the regulations to have the aging management programs
15 under -- under their quality assurance program and to go through their
16 corrective action programs.

17 What we believe is missing from that is a proactive
18 effectiveness review of those programs. Not just reactionary based on
19 operating experience, but being proactive to determine whether or not
20 through conservatory research, those programs are continuing to be
21 effective.

22 And we think that's important when you get beyond 60
23 years. So that would be the one additional requirement.

24 Secondly is the reporting. We do get information from
25 the industry either directly through INPO or through EPRI, sometimes
26 through our Office of Research. But it's not a requirement for us to get

1 that information.

2 And we believe it's important to have us get that
3 information to consider and any updates to the generic aging lessons
4 learned document. Or to take any specific actions we believe are
5 necessary.

6 COMMISSIONER MAGWOOD: Mark, did you want
7 to add something? It looked like you were -- oh, okay.

8 Let me also, let me ask you to follow up on, you heard a
9 conversation with David Lochbaum. I want to focus on the licensing
10 basis issue. And I think Mark, you and I have had this conversation at
11 some point in the past. It seems like we have.

12 Can you -- you heard the conversation, so I'll just ask
13 you to react to that and see what the stats used are. I mean I think it is
14 not necessarily a license renewal issue, it's really, I think it's sort of in
15 the tenor of what Commissioner Svinicki mentioned.

16 This is sort of an issue right now. It's not necessarily
17 an issue for license renewal. But it does come up on this context. So
18 I'd like to give you a chance to react to that.

19 MR. SATORIUS: Well as I look back at the history of
20 design based type issues and license reviews and how they're all
21 linked, you know this -- the agency has a rich history of identifying when
22 we need to singularly focus on certain areas.

23 And I can remember back in the early '90s when we
24 put together an engineering design safety functional inspection
25 program that was designed to do just that. To try to tie the licensing
26 basis together by looking closely at engineering issues within the plant.

1 And how they related to their licensing basis and
2 whether there were deviations from that or not. Because we were
3 seeing a number of these issues pop up, and one of the functions of this
4 inspection, and we've changed our inspection program even after we
5 put the old program away and went to the ROP.

6 We changed and added a component design basis
7 inspection that does similar sort of things, trying to tie the design basis
8 and the licensing basis together to get a firmer understanding of how
9 the plants operated, how it's licensed.

10 COMMISSIONER MAGWOOD: Right, but -- and yet
11 you know Fort Calhoun for example, there's still clearly plants that do
12 have some of these issues. Is it you're suggesting that perhaps there
13 should be a separate consideration for an activity to try to capture
14 those, or --

15 MR. SATORIUS: Well I think -- I think that the reviews
16 we do on an annual basis, you know we just had the AARM, and we're
17 scheduled I think to brief the Commission out on that annual meeting
18 here in the next month or so. We look hard at the ROP and are there
19 issues.

20 And by the way, we learn from Fort Calhoun so that we
21 can turn that around and make our inspection program better. And we
22 are making our inspection program better.

23 We've engaged in a review this year, and actually a
24 special review of the ROP where we've brought people that have a
25 history of inspection activities, former inspectors, that are now outside
26 of the ROP and outside of that.

1 Individuals that used to be inspectors and had
2 operated within the ROP so that they could take an independent view
3 as to is there anything within the ROP. And they came up with a
4 number of very, very thoughtful recommendations that we're going to
5 need to get our arms around.

6 So I guess what I'm pointing to is that there seems to
7 be a bit of flexibility and we're looking for -- always looking for areas that
8 we can change our inspection program so that we can be more robust
9 in being able to determine where our licensees are.

10 COMMISSIONER MAGWOOD: Here you, give
11 Jennifer a chance to add.

12 MS. UHLE: Thank you. I'm Jennifer Uhle, I'm the
13 Deputy Director of the Office of Nuclear Reactor Regulation. And just
14 to provide a specific example to compliment what Mark has stated.

15 In the case of Fort Calhoun as well as the seismic and
16 flooding walk downs, we do ask the question since we were looking at
17 design basis issues, why weren't they caught under the Reactor
18 Oversight Program? So at this stage we're going through and we're
19 doing -- we're looking at all of those actions on the restart checklist for
20 Fort Calhoun. We're looking at the flooding information that was
21 determined -- that was found through the walk downs as well as the
22 seismic. And we're looking to see which of those are safety significant
23 and therefore should have been caught under the ROP.

24 And then as Mark indicated, we're taking that
25 information and we'll be using that under our enhancement program
26 and our continuous improvement in the ROP. And looking to see

1 where we need to change the ROP.

2 COMMISSIONER MAGWOOD: Okay. Thank you.
3 Let me just ask one more question and wrap up. The staff
4 recommendation includes expanding the scope of regulation include
5 equipment under 10 CFR 50.54(hh2). Can you clarify that for me a bit
6 because the license renewal philosophy involves passive equipment.

7 So is it just the passive pieces of that equipment, or are
8 you expanding beyond passive equipment?

9 MR. PHAM: We -- I heard from the previous panel
10 discussion. We're not looking to try to replicate what the existing rules
11 that are out there. The philosophy behind license renewal and why we
12 scoped in things that were safety related, non-safety related, and then
13 there's the five regulated events.

14 We brought those things in not to replicate existing
15 regulations out there, but the intent of license renewal is to catch long
16 lived and passive components that are out there that are important to
17 safety, that we do need to have some aging management aspect in
18 order to maintain the intended function of those components.

19 At this point, and because of the nature of the plant
20 specific aspects of those equipment, to meet the requirements of 10
21 CFR 50.54(hh2), we were hoping to go forth and get the approval to go
22 forth and explore further in the rulemaking process to see you know,
23 what exactly, which of the equipment there are, the ones that should be
24 scoped in that are important to safety for aging management.

25 MR. LUBINSKI: But the short answer is yes, it is only
26 the passive aspects of those components. We're not looking to scope

1 in any active components.

2 COMMISSIONER MAGWOOD: So for example?

3 MR. LUBINSKI: Well for example, if I start to look at
4 pumps and valves at the plants that are, you know the casing is a
5 passive part of a pump. So we would look at that under aging
6 management.

7 So we would have to look at other equipment. And
8 we've learned since we put the paper forward, that maybe just singling
9 out 54(hh) was not the best. And instead saying all those items that
10 are important to safety, and just looking at the passive components,
11 and the passive aspects of that. Not the active components.

12 COMMISSIONER MAGWOOD: Which I would think
13 was already captured by the license renewal rule.

14 MR. LUBINSKI: At this point the way it calls out the
15 issues, it had not called that out. And that would be something we'd
16 have to look at through the rulemaking.

17 COMMISSIONER MAGWOOD: Okay. Thank you.
18 Thank you Chairman.

19 CHAIRMAN MACFARLANE: Commissioner
20 Ostendorff.

21 COMMISSIONER OSTENDORFF: Thank you
22 Chairman. Thank you all for our presentations. I'm going to start off
23 with some comments before getting into any questions. One of the
24 beauties of having a Commission structure is we get a chance to talk in
25 public at these meetings about our viewpoints on certain things. And I
26 feel compelled to do that.

1 As Commissioner Magwood pointed out his concerns
2 on slide 10, and I respectfully had a different reaction to it then
3 Commissioner Magwood. And would suggest that the
4 non-concurrence was part of the public release -- public document that
5 is released.

6 I met in my office before this meeting a couple of weeks
7 ago with the non-concurren. And rather than thinking this may be --
8 and I don't think Commissioner Magwood intended for this to be a
9 criticism of the non-concurrence process, maybe just the balance as to
10 how it is presented in the slide.

11 So I think, I just want to go on record for saying that I
12 think we have a very strong non-concurrence process. I think the
13 individual had a very cogent argument. I'm not going to say I agree or
14 disagree with his comments in this forum.

15 But I think that it's a strength of this organization. I
16 think he very respectfully presented his arguments to the Commission
17 in this paper. And I just want to make sure that that message was part
18 of -- added to Commissioner Magwood's comments.

19 MR. SATORIUS: I appreciate that. And to
20 Commissioner Magwood's comments. The way I took it was that we
21 should be thoughtful about the manner that we put our slides together.

22 COMMISSIONER OSTENDORFF: And I agree with
23 that comment. Yes.

24 Let me go on and piggyback on Commissioner Svinicki
25 and Commissioner Magwood's comments on the current licensing
26 basis. I completely agree with that line of questioning and the

1 concerns.

2 And in particular, Commissioner Svinicki's comments
3 on the first panel to Dave Lochbaum that we should not wait for
4 subsequent license renewal to rectify deficiencies or shortcomings in
5 the current licensing basis. So I completely agree with my colleagues
6 there, and that's outside the context of subsequent license renewal.

7 I'm going to be -- just talking to myself. I don't think I
8 have a good feel as a Commissioner, and I've been here now you
9 know, four years. I don't think I have a really good feel for ongoing
10 licensing actions that our staff takes to update the licensing basis.

11 And I think perhaps in the SRM, I'd ask my colleagues
12 consideration of maybe framing some type of an Information Paper to
13 come to the Commission to give us a better education perspective on
14 what's going on in the licensing basis. Because I don't think I know
15 enough.

16 I'm going with another comment. Every now and then
17 we have issues before the Commission, and this may be one of those
18 where the entire regulatory holistic approach to deal with issues is not
19 fully brought to the Commission. And I -- again, I'm not an expert on
20 these issues.

21 And I know that the first panel's discussed it, you
22 discussed it in your presentations, Commissioner Magwood raised one
23 of these issues. But when we look at the reporting requirements or the
24 report mechanisms, feedback loops that include such things as the
25 maintenance rule, Part 50, Appendix H and quality assurance, the
26 reports of in service inspections during outages, and Jennifer Uhle

1 talked about reactor oversight process and then the Fort Calhoun
2 situation, the generic aging lessons learned issues. I think there's a
3 whole envelope very broadly drawn around various things that come
4 into the NRC staff that have a nexus to this operating experience in the
5 context of aging management.

6 And so I want to associate myself with Commissioner
7 Svinicki's comments that we ought to be very careful about trying to
8 re-label, or create duplicate or redundant programs if those
9 mechanisms already exist, maybe under some other taxonomy?

10 And so I think understanding fully what the different
11 programs are, I don't know if the SECY paper is considered by the staff
12 a full compendium, appendix of all the different programs that have a
13 nexus with this or not.

14 And that's kind of my question, is do we have a full
15 summary of all the different NRC nexus touch-points for the industry to
16 look at in the context of this decision? John, do you want to take that
17 on?

18 MR. LUBINSKI: Yes, the paper was definitely
19 focused just on subsequent license renewal. And what we were trying
20 to do is not come to the Commission with a full overview of current
21 licensing basis, current programs, except to say that we believe those
22 programs were acceptable.

23 And that any issues that come up as you've said,
24 would be handled today. We many times refer to it as is this a today
25 issue, or is this a license renewal issue? Meaning from the standpoint
26 of what's the scope.

1 And if it's a today issue, we need to handle it today.
2 Whether it's in the ROP process, the current licensing basis,
3 regulations that we put in place that we would consider back fitting on
4 folks.

5 So we didn't get into that full discussion of all those
6 programs.

7 COMMISSIONER OSTENDORFF: So let me
8 comment. Because I'm going to ask you to follow up on this.

9 MR. LUBINSKI: Sure.

10 COMMISSIONER OSTENDORFF: So the first panel
11 we heard two witnesses clearly say we are already providing this
12 information to NRC. Perhaps outside the context of an aging
13 management program issue, but I don't know why -- I have a question
14 that I'm asking about.

15 Are we missing something in this paper because we
16 don't have this full view of all the existing ROP, GALL, ISI, fill in the
17 blank, those kinds of programs?

18 MR. LUBINSKI: Okay. I would say I would hope
19 we're not missing anything in the paper, because that was certainly not
20 our intent.

21 COMMISSIONER OSTENDORFF: No, I understand
22 it wasn't the intent.

23 MR. LUBINSKI: Right. So I don't think we are. I
24 think from the higher level standpoint of looking at this, to be able to say
25 what really falls within the scope of subsequent license renewal, you
26 know what are those issues that are unique when you get into

1 subsequent license renewal that require those changes?

2 And that's why when we look at Option 4, and we only
3 had two discreet issues listed there, because we felt that the rest of the
4 regulatory processes were robust enough to handle that.

5 Some of the items in Option 2 or 3 are ones that would
6 also apply to the current license renewal program. And that would
7 consider us to look at whether we would backfit those, or just put those
8 on licensees that are currently coming in.

9 So I think we made that assumption. Now from your
10 first comment of understanding the licensing basis and maybe a paper
11 to the Commission on that, I think that would be an area where maybe
12 more information could be provided.

13 COMMISSIONER OSTENDORFF: And I'm not
14 saying it's directly related to subsequent license renewal. But I think
15 we have all of these things, and I'm using my hand intentionally over
16 here, in the subsequent license renewal, and I think there's perhaps
17 more interconnectedness in feeding into the information flow for the
18 NRC, that perhaps we need to better understand.

19 MR. LUBINSKI: And if I could also add to that, one,
20 and the comments that we made of aging management programs, I
21 think that was an area that if you were to look back and if I were to say
22 put a different term on it, I would probably not call it aging management
23 programs for license renewal. Because the aging management
24 program started from day one.

25 There were components whether they were active or
26 passive that had aging management programs in place. What we just

1 determined is when you hit that 40 year mark, and then you hit that 60
2 year mark, is that's when there may be new degradation mechanisms.

3 It's a chance that you have to re-look at those
4 programs to determine, because the basis for those were based on the
5 40 years or based on the 60 years. And it's do we look at those and
6 say are they robust enough to continue beyond 40 years, beyond 60
7 years.

8 And as plants put those aging management programs
9 in place, they don't have a new procedure. They don't have a new
10 system in place that said these are the aging management programs
11 for the first 40, these are the ones for the next 20. It's all one aging
12 management program on that component that puts this together into
13 one program. And inspections are done that way as well.

14 COMMISSIONER OSTENDORFF: Okay, I got time I
15 think for one last question, and it's a fairly significant question and I'm
16 going to use Mirela as one example from your presentation, which I
17 thought was very helpful.

18 But big picture, guidance -- changes to guidance
19 versus rulemaking. Did you consider, and one of the comments I think
20 Mirela from your slide 12, I think you made the comment that aging
21 management programs do not always document enhancements. I'm
22 just using that one example as a context.

23 Is that something that could be changed via guidance
24 document change, or does that requirement rulemaking?

25 DR. GAVRILAS: I'll let Bo answer.

26 MR. PHAM: Sure, and that's what I mentioned in

1 terms of the insights that we gained from actually being at the sites
2 doing the audits and trying to gain that information.

3 Trying to do it through guidance would continue to get
4 -- keep us in this loop of are we doing engagement -- we have been
5 engaging with individual licensees in the industry regarding what type of
6 information would demonstrate with objective evidence how aging
7 management programs are being maintained on a living basis
8 basically.

9 However, without a regulatory footprint, I think at best,
10 the staff would have to -- the oversight folks would have to go through a
11 pretty -- the burden would be a lot on the staff to really trace back the
12 lack of documentation in some cases, of what's available at the site to
13 show that this particular failure or indication from an inspection result
14 was as a result of them not performing what they were supposed to do
15 in the aging management program.

16 COMMISSIONER OSTENDORFF: So your concern
17 would be the footprint, the enforcement tool, is that what I'm hearing
18 from you?

19 MR. PHAM: Yes sir.

20 COMMISSIONER OSTENDORFF: Okay. Mirela did
21 you want to say anything else?

22 DR. GAVRILAS: Yes, if I can elaborate on what the
23 problem is as I -- as I hear about it, it's these aging management
24 procedures have some -- cover multiple plants of different types and
25 different vintages.

26 So if it's not clear in the documentation, we see that the

1 AMP evolved. The aging management program has evolved. But we
2 don't see why that evolution.

3 And sometimes there's aging related degradation that
4 ought to be flagged so that we make sure that it's not just that one
5 particular unit that's effected by it. But that information is distributed
6 throughout the fleet.

7 So that's the kind, and if we're seeing that after you
8 know, five years, I think the staff is wondering how are they going to
9 look at, how intractable is that information going to be after 20 years?

10 COMMISSIONER OSTENDORFF: Okay.

11 DR. GAVRILAS: I hope that helps.

12 COMMISSIONER OSTENDORFF: That does help
13 very much. Thank you Chairman.

14 CHAIRMAN MACFARLANE: Thank you. Just to
15 weigh in on this issue of non-concurrences. I strongly encourage you
16 to air non-concurrences. I think debate is essential to good regulation.
17 And so I would just encourage you to continue to do that.

18 For Dr. Gavrilas. You mentioned that you integrated
19 international experience into your assessment. What countries
20 participated?

21 DR. GAVRILAS: I can -- I know right off the top of my
22 head that Sweden was one of the countries. And I have -- Rob
23 Tregoning might know more examples.

24 CHAIRMAN MACFARLANE: Well you don't have to
25 give me an exact list, but I'm interested in knowing whether they had a
26 similar process for extending licenses, and whether they focused on

1 passive components. You know whether they had similarly thought
2 about this, or whether they were different. And whether you found the
3 differences useful.

4 DR. GAVRILAS: The items that people looked at
5 under the EMDA were very limited scope. The -- everybody was looking
6 at degradation mechanisms. What's going to happen between 60 and
7 80 years that we haven't seen so far. And how much do we know
8 about what's going to happen between 60 and 80 years.

9 However the staff overall has taken a look at how
10 license renewal is accomplished internationally. And I can talk about
11 the small effort under that. We've looked at the periodic safety reviews
12 that were conducted in 14 plants in nine countries that have reactors
13 similar to ours.

14 And we only looked, what can we learn? What type of
15 OE, operation experience they have, that we haven't caught by other
16 means and other interactions with the international community. And
17 we found few. There's been a couple of examples, but we found few.

18 And to complement that effort, so that was a targeted
19 effort on strictly technical issues linked to operating experience. But I
20 think that NRR had a complimentary broader look, and I'll let John or Bo
21 mention it.

22 MR. LUBINSKI: If I can answer that question from two
23 parts. One from I'll call the regulatory perspective is, in looking at what
24 other countries do with respect to license renewal and long term
25 operation, it varies greatly. And whether licenses are issued for ten
26 years or have no expiration dates.

1 There's also many countries in the world implement
2 periodic safety reviews. And again, the way those results are handled
3 and implemented vary as well. Whether or not it's a pure compliance
4 review, small safety issues or large safety.

5 Where we're seeing a lot of consistence, we've just
6 participated with the International Atomic Energy Agency in developing
7 an international generic aging lessons learned report that really goes
8 towards long term operations with the definition being again, depending
9 on the country whether your consider 20, 40, 60, 80 years to be long
10 term.

11 Where we're sharing the technical information of what
12 kind of material degradation mechanisms are we seeing? What are
13 we seeing in concrete? What are we seeing in cables? So that we
14 can get a sharing of that.

15 But we were heavily involved in that. We expect the
16 first version of that to come out soon. And we expect that IAEA will
17 continue to develop additional revisions to that. And that's the
18 information that we've seen used by many countries in determining
19 what type of aging management programs they use.

20 CHAIRMAN MACFARLANE: So how many countries
21 are considering going out to 80 years?

22 MR. LUBINSKI: At this point we haven't done a poll,
23 but what we've got so far is that many of them have a -- as I said, it
24 varies. That they have no expiration date. And in some cases where
25 they have no expiration date, what they're doing is relying on their
26 periodic safety reviews.

1 And as part of that, some are requiring additional
2 safety enhancements. Some are looking at 40 years to require those
3 additional safety enhancements. Some are looking at 60 years. I'm
4 not aware of any that made any decisions at this point as far as going
5 beyond 60.

6 CHAIRMAN MACFARLANE: Yes. Because the
7 feedback that I received at a recent international meeting was shock
8 and awe at going out to 80 basically. So I don't know that the
9 international community is on board with that.

10 And I also heard a lot of input about you know we now
11 are having these, and I think this gets to some of the points made by --
12 in the non-concurrence.

13 We now have these plants, these Gen Three plants.
14 And they have, you know they're safer. And there are additional
15 requirements on them like PRA for instances.

16 And so how do you reconcile allowing the existing
17 plants to go out to 80 years without putting some additional
18 requirements on them like that?

19 MR. LUBINSKI: I'll answer that in two parts. And let
20 me start with when we hear that from the international community, we
21 were at a conference recently and as part of their periodic safety review
22 of 40 years, one country was requiring an analysis against a generation
23 three design reactors.

24 And what they said was that plants would need to
25 make any changes that they found reasonable and practical to meet
26 that design. But they had no clear definition of what reasonable and

1 practical meant.

2 And that's what they were trying to determine. So
3 therefore it's unclear when they say they're going in that direction what
4 they're doing.

5 From the standpoint of how we see it in U.S. today, and
6 our belief is, we look at the issues of whether you're going to a new
7 reactor design, generation three design, additional safety
8 enhancements, we think that should be done as what again, I'm
9 referring to as a today issue, not a part of subsequent license renewal.

10 We believe all the reactor designs that are in place
11 today are safe today. Some of them have been operating 46 years. If
12 they were not safe, we would take action today. We believe they're
13 safe.

14 We believe as you continue to move forward that
15 licensing basis has been enhanced to improve safety. There's no
16 longer the 600 Alloy, they're now going to different alloys. They're
17 making changes, they're more robust.

18 So the safety profile again, is enhanced today. So we
19 think that's acceptable. If we felt there was an enhancement needed
20 across the board, we wouldn't wait until 60 years to do that in the
21 process we would do it today especially given the age of the reactors.
22 Some reactors were licensed in the '90s are we going to wait another
23 40 years to put those enhancements in place? If we felt they were
24 something that should be done, we would recommend doing it today
25 across the board, and not based on just the age of the plant.

26 We believe what's important to age is the aging of the

1 components. And taking those actions with respect to aging of those
2 components to make sure they're safe.

3 CHAIRMAN MACFARLANE: Right. It seems to me
4 that we do expect degradation to occur, correct?

5 MR. LUBINSKI: We know degradation will occur, yes.

6 CHAIRMAN MACFARLANE: Will occur, okay, good.
7 If that's the case, there are significant uncertainties it seems to me as
8 we look out to 60 to 80 years in terms of the processes that occur, the
9 interactions among different processes and systems that make it
10 difficult, that make the uncertainties increase in terms of our ability to
11 really understand what will happen.

12 Shouldn't we in that -- in the face of that, consider and
13 use all the tools available to us to make sure that we really understand
14 what will happen? And those tools will include PRA.

15 MR. LUBINSKI: We believe that if a licensee can
16 come to us and identify what those degradation mechanisms are, as I
17 said, we expect degradation, we know occurs. If they can identify what
18 the degradation mechanisms are, and have an adequate program in
19 place that identifies when they can identify it, that is the frequency of
20 inspections, the frequency of testing, so that it is identified before it
21 becomes a safety issue, then we believe that that's an adequate
22 program and they can continue to operate.

23 So addressing those safety issues would be that once
24 they identify that degradation issue before it becomes a safety issue,
25 they would either have to mitigate or repair, or if they have not identified
26 a way to do that, then they would have to replace that component.

1 CHAIRMAN MACFARLANE: Yeah, I'm going beyond
2 the specific degradation mechanism on this specific you know pipe here
3 but trying to understand the interactions that might occur. You know I
4 think that that's a piece of it that I'm not sure that we really can get our
5 hands around very well with the tools that you're currently using.

6 Let me ask another question. You know there are a
7 number of problems that are of course introduced by using new
8 materials, replacement materials that are not an exact match,
9 replacement systems that are not an exact match, replacement
10 equipment that's not an exact match, have you considered that in
11 thinking out to 60 to 80 years? And how would you consider that?

12 MR. LUBINSKI: We do consider that. And maybe
13 Mirela can add to one of the examples. As we're starting to look at
14 some of the new materials, again they're looking at materials that you
15 put in place that aren't going to have degradation mechanisms.

16 And of course as we said, at some point in time, they're
17 going to have that. What we're finding now is that as they're looking at
18 some of these new materials, they're so robust that they're even having
19 trouble identifying what those degradation mechanisms are, and how to
20 get to it.

21 The number of cycles that they've put into it, the
22 temperature, the irradiation, so we're seeing that the new materials are
23 very robust. So if they're more robust than the current materials, and
24 they stick to the current programs of inspection, identification and
25 frequency, then that adds an additional margin of safety.

26 CHAIRMAN MACFARLANE: Yeah, I'm just thinking

1 about steam generators basically.

2 MR. LUBINSKI: And maybe Mirela can respond to
3 the steam generator issues.

4 CHAIRMAN MACFARLANE: You know, not just the
5 -- I'm thinking about the materials and I'm thinking about the structural
6 aspects. That's what I'm thinking about. And you know, how -- and
7 there are going to be other things besides steam generators as
8 material.

9 And you know, and we're not the only ones thinking
10 about this. The nuclear weapons complex is also thinking about
11 similar kinds of things, you know. Do we share knowledge?

12 MR. LUBINSKI: My answer was based on a materials
13 degradation mechanism there. And when you talk about design and
14 designs going in place, if someone is replacing the design, I believe we
15 have a robust program in place right now from the standpoint of our
16 regulations and our oversight programs.

17 When the issues are identified where there may be a
18 design issue, as Mark said, we look at our oversight program to
19 determine if there's lessons learned from that. I think what has been
20 a success in many of these cases is we have identified these issues
21 before they've become a significant safety issue.

22 So the programs are working from the standpoint of the
23 oversight to identify before they become an issue, even in the current
24 processes today.

25 CHAIRMAN MACFARLANE: Okay, thank you.

26 DR. GAVRILAS: The only thing that I would add to

1 that, talking about the materials, the example that you've given, I was
2 thinking of the other part of the steam generator, the transition from 600
3 alloy to 690 alloy --

4 CHAIRMAN MACFARLANE: Yes, that's what I was
5 thinking too.

6 DR. GAVRILAS: Which was a tremendous benefit in
7 terms of degradation of the tubes themselves. And I brought up in my
8 presentation for primary water stress corrosion and cracking. We
9 continue to have research programs.

10 We continue to research the tubes that have 690, and
11 we continue to look at the new replacement materials and how
12 susceptible they are to -- even though they've been designed to
13 withstand it much better.

14 CHAIRMAN MACFARLANE: Okay. Commissioner
15 Svinicki.

16 COMMISSIONER SVINICKI: Well thank you all. I
17 know there's occasionally some impatience with my continually passing
18 myself off as an amateur historian. But I'll begin by reflecting back on
19 the initial 40 year period for licenses issued in the United States.

20 And I've tried to study the history of that. My
21 understanding of it is that 40 years had essentially little or nothing to do
22 with the aging of anything. It had to do with economic considerations.

23 And given this very young energy source, and young
24 industry in the United States, it was viewed that anyone embarking
25 upon building a plant would need some assurance of a period of time
26 within which they could recoup their investment. So it had -- was

1 almost entirely driven by economic considerations.

2 But you know, I think it's also human nature to sit and
3 say, as I sit today, the uncertainties and the challenges and the
4 complexities of what's in front of me, are so unprecedented and are so
5 much harder and more difficult than what people had to deal with.

6 But I think that probably AEC Commissioner sat and
7 looked at such a young technology and how little operational
8 experience there was about it. And had to decide to issue or not issue
9 these 40 year licenses.

10 So imagine that they struggled at least antidotally or in
11 an analog sense with some of the same things that we're focused on
12 here. Also our colleagues a few decades ago had to look at the 40 to
13 60 year period and had to address some of these same challenges.

14 So I appreciate John's acknowledgment that aging
15 management, if you just want to think about it in the English language
16 term, began on day one. There were a lot of technologists and
17 regulators having to think about this from the day that this country
18 embarked on a nuclear power program.

19 In light of that, I want to take a couple of the specific
20 things that were put forward as things that doing a rulemaking could
21 help us to better capture. John you mentioned -- first of all you
22 acknowledged that the flow chart that we saw from one of the external
23 panelists is not a voluntary system that is the formal mechanism for
24 feedback and OE collection and feeding that back through programs.

25 But you indicated that if we -- one of the things that we
26 would establish and could possibly benefit from is a proactive

1 effectiveness review of aging management. I would ask you if we
2 require in regulations, an effectiveness review for anything that would
3 be analogous, like maintenance programs, or engineering programs at
4 plants.

5 Do we have a parallel provision for operating reactors
6 right now that would be similar to the type of, you're saying a proactive
7 effectiveness review. Do we have that in place for other things?

8 MR. LUBINSKI: Yeah, I would say from the
9 standpoint of -- and we have some people here who can talk about our
10 maintenance rule on the active programs.

11 But one of the differences there again, you're talking
12 about active components replaced much sooner, more testing. So it's
13 not as important in those areas.

14 I believe we do have similar type programs. When we
15 start to look at emergency preparedness, we do look at the
16 effectiveness of the emergency preparedness programs, and do those
17 types of reviews as well.

18 So it's not totally unprecedented we would look at
19 having people go back and review their programs themselves. At this
20 point it just is a little bit different from the standpoint of it's on a
21 component versus a process where most of ours I think are more
22 process oriented.

23 COMMISSIONER SVINICKI: I mean it's clearly
24 something that one would benefit from. Do you think -- do you predict
25 now that we would have a strong basis for making this a compulsory
26 regulatory requirement or is that something you'd have to develop

1 through the rulemaking process?

2 MR. LUBINSKI: We would definitely have to develop
3 through the rulemaking process. That's the first step.

4 COMMISSIONER SVINICKI: Not everything
5 beneficial can be compelled.

6 MR. LUBINSKI: That is correct. And when we
7 looked at what we propose forward is, the first step is to develop that
8 what is really the cost of the program? What are the benefits of the
9 program to do that analysis. And that's what we're seeking from the
10 Commission, is for just those specific items, to do that initial analysis
11 and do that reg analysis to determine whether or not we believe it's
12 viable to go forward in these areas.

13 We may found out it's not possible. We may find out
14 there's not as much benefit as we're thinking, or we may find out that
15 the cost is just extraordinary. But we want to start that first step in the
16 process.

17 We've been asked by the industry if we've done a cost
18 benefit analysis of all these recommendations, and the answer is no,
19 we have not done that yet. Because we don't want to start down that
20 process until we get the Commission providing direction and guidance
21 on whether it's even worth pursuing these as options.

22 COMMISSIONER SVINICKI: There was also a
23 response give by the staff that it would be beneficial for certain aging
24 degradation experiences to be flagged, that was the term used, and
25 reviewed for their applicability throughout the fleet. My understanding
26 of most of our, or our formal OE, or our operational experience

1 programs would be that that is one of the principal purposes, is to flag
2 things that may have potential applicability throughout the fleet.

3 Is there some reason why operational experience that
4 related to aging degradation would not be evaluated in that way under
5 our current system?

6 MR. LUBINSKI: If you look at the current regulations
7 on what's reportable, some of the aging management programs, and
8 some of the effectiveness of the aging management programs may not
9 meet the threshold of being reported to the NRC. We may be getting
10 some of that voluntarily.

11 COMMISSIONER SVINICKI: It may be more the
12 benefit would be you'd have trending of lower significant items that are
13 currently not reported.

14 MR. LUBINSKI: Well they seem to be low significant
15 at this point because you're early in the aging process. But I wouldn't
16 want to call them low significance overall because just because we're
17 seeing -- you know, seeing today it's not an issue --

18 COMMISSIONER SVINICKI: Because we don't
19 know.

20 MR. LUBINSKI: We don't know. So that's where we
21 want to be able to get that information. I wouldn't -- rather than call it
22 low significance, is early indicators to be able to get information on what
23 could be an early indicator of a problem.

24 COMMISSIONER SVINICKI: Yes, the gentleman at
25 the microphone.

26 MR. HOWE: Yes, good morning and thank you, I'm

1 Allen Howe, I'm in the Division of Operating Reactors -- Division of
2 Inspection and Regional Support, thank you.

3 COMMISSIONER SVINICKI: Well then I don't feel
4 bad not knowing you. If you don't know what division you work in.

5 MR. HOWE: I was going to the operating experience
6 piece of it. There's a -- there's a --

7 COMMISSIONER SVINICKI: Welcome to the NRC.

8 MR. HOWE: Yes thank you. There's a lot of different
9 types of information, data streams that the operating experience team
10 looks at. One of them is the licensee event reports. We also look at
11 inspection reports. We also look at international experience. And in
12 addition to that, we also have -- we look at industry information as well.

13 So there's a lot of different things we look at and
14 assemble and accumulate to come up with are we seeing any issues or
15 any trends associated with equipment issues and you know, potential
16 trends and failure mechanisms.

17 And one thing that I would add, is that we're looking at
18 everything in terms of component failures. Not just aging related
19 component failures. We're neutral on what the cause is. We're
20 looking at all those things. And assessing that and evaluating whether
21 or not we need to take any additional regulatory action.

22 COMMISSIONER SVINICKI: Okay, I appreciate that,
23 and particularly because it comports with the general understanding I
24 had of the robustness of our evaluation of that. But again, I think the
25 distinction that John is pointing out to me is that if things don't make it
26 into that system, then you don't know anything about them because

1 they didn't make it into the system.

2 MR. HOWE: Correct.

3 COMMISSIONER SVINICKI: Okay, so at least I
4 understand now that OE is very thoroughly evaluated, but only the stuff
5 that's reported, okay. So I appreciate that distinction.

6 The last item that I wanted to talk about was that one of
7 the elements, if the staff moved forward to rulemaking, that they would
8 at least examine is abbreviating potentially the period of time that a
9 licensee would have to come in in advance of license expiration for a
10 subsequent license renewal.

11 And again, I'll put on my amateur historian hat, in the
12 history I've studied about the current frame work that we have, was that
13 the Commission and the staff at that time, evaluated, well gosh, if you
14 need to come in and get through this system, and if it's a renewal
15 review, some applications will likely move quicker than others. There'll
16 be issues flagged.

17 And then if applicants were to wash out of that system
18 and you found out that you couldn't operate the asset, then that region
19 or state or whatever, you know transmission area, would need to look at
20 replacing that generating capacity, no matter what kind of capacity you
21 put in, you'd need the time to do that. To do the permitting and get it
22 approved and get electricity installed.

23 Because generally, citizens don't like to flip that switch
24 and not have electricity. So it is a matter of needing some advanced
25 notice on that.

26 So if I were to posit this to you, I'd like you -- any of you

1 to react to this, which is that so if at that time period where there was a
2 lot more rate regulated generation, where there was not, I don't think as
3 many, or maybe even any, renewal portfolio standards in states.

4 You did not have under contemplation, changes to
5 carbon regulations under the Clean Air Act. You did not have
6 substantial changes to EPA requirements regarding cooling water and
7 other things like that.

8 If the Commission at that time felt like 20 years was
9 absolutely needed, if I were to say to you, that given the state of the
10 energy landscape in the United States right now, this seems like almost
11 the worst possible time for NRC to be potentially abbreviating the
12 planning period.

13 And then perhaps the replacement generating capacity
14 that you might need here. That this is, if anything 20 years, maybe
15 even need 30 years or 40 years.

16 And my second point is that the staff based this
17 potential change on the fact that we need perhaps more time for the
18 aging management programs, and for people to be operating in the
19 extended period of operations. We already have today 56 years of
20 reactor years of operating experience in the PEO, period of extended
21 operations.

22 And that grows really, really fast. Because the first
23 year of that 56 years happened while I was already on this Commission,
24 and I haven't been on the Commission for 56 years. So, although it
25 might feel like it.

26 So that's going to grow really, really quick, that body of

1 knowledge over time. Because we have a -- we've renewed 73 more
2 entering their period of extended operations.

3 So, how would you react to all of that saying that the
4 basis for abbreviating that period now is probably -- there's even a basis
5 to keep it the same or have it long.

6 MR. LUBINSKI: Let me start with from the standpoint
7 of planning, and you heard this from Mike Gallagher this morning, is
8 that they're looking from a planning, as you said from energy, and
9 looking at the energy, we do need to have that planning.

10 That would be something that we would look at in what
11 I'll call the cost side of it. What would be the impacts, what would be
12 the costs if we were to do the regulatory analysis and then moving
13 forward in this area.

14 So we would consider that aspect. But what's more
15 important though, going forward is, we're not going to approve a
16 license, whether it's for license renewal or subsequent license renewal,
17 unless we have a reasonable assurance that they can manage the
18 aging of the program.

19 What we're trying to achieve here is more of the
20 predictability and the transparency in coming forward. If a licensee
21 were to come in today as an example, at year 40, and the licensees can
22 do this today. The rule does not prohibit subsequent license renewal.

23 They could come in today and ask for subsequent
24 license renewal. What would we do with that application?

25 If we didn't have the information to be able to make a
26 determination that their aging management programs are effective, we

1 would basically be telling them go back and do more work. And we'd
2 have the application sit on the shelf for a few years.

3 What we're trying to do is take that out of the process.
4 We're trying to make sure that before the first application comes in, we
5 have an adequate basis that says, here's what the needs are, here's
6 what the information is. Here's what we consider needed to make sure
7 we have an effective aging management program.

8 And we think when we look out to beyond 60 years,
9 again, when you hit day one of going into your period of extended
10 operations, and you're already coming in and asking for another 20, we
11 think we need more information.

12 COMMISSIONER SVINICKI: Well, I mean all I want
13 to say to that is that the staff did not have experience by each licensee
14 of how they implemented an aging management program when you did
15 the first round of renewals, and you were still able to recommend that
16 those licenses be renewed.

17 So with that I yield back. Thank you.

18 MR. LUBINSKI: Thank you.

19 CHAIRMAN MACFARLANE: Okay, thank you.
20 Commissioner Apostolakis.

21 COMMISSIONER APOSTOLAKIS: Thank you. On
22 slide nine, which Mr. Pham you presented, under other rulemaking
23 considerations, you list licensing basis update. And in the notes, you
24 say the reason this is included in the SECY, is that as plants continue to
25 operate further out from their original license, changes to the
26 surrounding plant environment could potentially differ from the plant's

1 current licensing basis.

2 Is that unique to license renewal? Why didn't you do it
3 today?

4 MR. PHAM: Well at the time where we looked at
5 where we were developing the paper, by virtue of looking at the
6 possibility of operating beyond 60 years or so, that possibly wouldn't
7 exist today. So because of that, we linked that to a potential issue that
8 is only unique to subsequent renewal itself.

9 COMMISSIONER APOSTOLAKIS: Why is it unique?
10 I mean if there are changes like the example you had mentioned here,
11 local water table, construction of nearby industrial facilities over time, I
12 should do that today.

13 MR. LUBINSKI: And I guess we're both coming from
14 -- when we were making a determination whether it was unique to
15 license renewal, that was our first thought is this would be unique at the
16 60 year mark. And then we said really it's not. And that's why we
17 chose not to put it into the paper as a recommendation.

18 Instead we looked towards what's being done in
19 response to the near term task force on Fukushima and said they're
20 already looking at the flooding and the seismic issues. Under
21 recommendation 2.2, they're going to consider rulemaking to include
22 additional environmental.

23 So what we've done, is we've asked the team that's
24 looking at that to consider these today as current licensing issues and
25 how often those should be done rather than linking it just to the 60 year
26 mark.

1 But we felt that it was important to put into the paper to
2 the Commission to let you know that we did recognize that these are
3 time sensitive items. They will change over time.

4 One may consider that it's done during license renewal
5 or subsequent license renewal, but instead we felt tying it to the near
6 term task force recommendations was a better pathway for resolving
7 the issue.

8 COMMISSIONER APOSTOLAKIS: So the licensing
9 basis update then will not be part of the other rulemaking
10 considerations, is that what you're saying?

11 MR. LUBINSKI: Yes.

12 COMMISSIONER APOSTOLAKIS: Okay. That's it
13 for me, thank you.

14 CHAIRMAN MACFARLANE: Okay. Any further
15 questions?

16 COMMISSIONER MAGWOOD: Just a couple of
17 quick comments rather than a question. First in listing to
18 Commissioner Svinicki's historical analysis of the consideration of how
19 long the terms of licenses were, I'm reminded of Satchel Paige's
20 famous comment upon people asking about his age, because when he
21 came to the major leagues, he was well into his 40s.

22 How old would you be if you didn't know how old you
23 are. And I think that somehow in a weird way applies to what we're
24 talking about here. Because it isn't so much what the number of years
25 is, it's really what is the physical condition and what are the programs to
26 assess that condition.

1 So the time doesn't really matter that much. So, just a
2 gratuitous comment, but.

3 COMMISSIONER SVINICKI: Can I make a general --

4 COMMISSIONER MAGWOOD: If you must.

5 COMMISSIONER SVINICKI: I actually -- someone
6 said to me the other day, said Plant X entered their period of extended
7 operations. And I said does the plant know? Did anyone tell the
8 plant?

9 The plant does not know it is in it's period of extended
10 operations.

11 COMMISSIONER MAGWOOD: Which makes
12 Satchel Paige's comment even more appropriate. That actually I just
13 wanted to, I thought the conversation, I kind of think some of
14 Commissioner Ostendorff's questions also brought this out. There
15 does seem to be a conversation we need to have about what can be in
16 guidance and what you lose if you go guidance versus rulemaking.

17 I think it would be useful to have a Commissioner
18 Assistance Briefing to talk this through a bit to make sure we have a
19 pretty full view of how this would work. And what we would lose if we
20 go down the rulemaking -- or excuse me the guidance path versus
21 rulemaking path. So I kind of --

22 MR. LUBINSKI: We can arrange that.

23 COMMISSIONER MAGWOOD: I'd like to have that
24 added to the consideration for the SRM. Thank you. Thank you
25 Chairman.

26 CHAIRMAN MACFARLANE: Anybody else?

1 COMMISSIONER APOSTOLAKIS: Yeah I do.

2 CHAIRMAN MACFARLANE: Okay.

3 COMMISSIONER APOSTOLAKIS: There is a
4 practical issue it seems to me here. And an issue of consistency. I
5 think the Chairman alluded to it a little earlier.

6 I can't reconcile in my mind that we are demanding a
7 summary of a PRA from reactors that are much safer than the current
8 feet. And then we dismiss the opportunity to demand a similar
9 summary. This is an opportunity of 60 to 80 on the basis that it is not
10 unique to aging. Or to the license renewal.

11 I don't know why that is. In the AP1000, of the
12 ASBWR and so on, they have all these passive systems and lessons
13 learned from past experience. And yet in Part 52, we ask them to give
14 us a summary of their PRA.

15 And here is an opportunity to do it for the operating
16 fleet which also would help with the issue I mentioned in the previous
17 panel of communication. And we're just dismissing it as not being
18 unique to license renewal. I mean there are practical issues too.

19 We can't -- my understanding of the regulations is that
20 today we cannot demand such a thing because of the backfit rule. But
21 this subsequent renewal rule gives us an opportunity to do it.

22 MR. LUBINSKI: If I could add two points to that is that
23 as you said, when we look at the benefits of a PRA, we look at that as
24 saying, again, it's not unique, therefore if we're going to do it, we should
25 consider it across the fleet today.

26 When you talk about backfit. From the standpoint,

1 could we backfit this on the existing 73 licenses that were issued?
2 We'd have to go through a backfit analysis and determine whether
3 that's the case or not.

4 You can make an argument that maybe you could pass
5 the backfit because it's only a reporting requirement and activities
6 Also you could make a decision today that it applies to the plants that
7 have not gone through the current license renewal. If you think it's that
8 important, you can do that today.

9 Also, from the backfit rule, if we felt it was important
10 enough, we could choose to make that decision. I would turn to
11 Margie as far as the Commission's authority to be able to do that.

12 But from the second standpoint as far as part of
13 subsequent license renewal. What we also need to understand is how
14 you're using the PRA and the information. Currently we're saying that
15 the current principles of license renewal are valid and should continue
16 to move forward.

17 If you used a PRA for subsequent license renewal, are
18 we now scoping in the active components into that as well, because
19 there's a large benefit in your PRA to what you're looking at as far as
20 the active components.

21 So the question would be, and we would need to
22 understand if the Commission went in that direction, are we changing
23 what we're looking at as the underlying premise of license renewal, to
24 now expand it beyond passive components. Or only the use of PRA
25 for passive components, in which we would not see as much of a
26 benefit.

1 If we are expanding beyond the current premise where
2 we're only looking at the passive components to active components,
3 then we'd have to look even broader to say are there other areas where
4 we should be making these kinds of changes.

5 So it's that first premise of only focusing on the passive
6 components for the aging where we said this was not the right
7 opportunity to do that and should again be looked at across the board
8 consistently.

9 COMMISSIONER APOSTOLAKIS: First of all I don't
10 think we can do it for the current fleet now because of the backfit rule.
11 So that's what I'm saying was a practical opportunity to do it in the
12 license renewal 62.80.

13 But this inconsistency of demanding something from
14 plants that are safer, and the other thing is, how long do you think this
15 agency is going to have a two pronged regulatory system? The safe
16 plants will also have PRA. The safe plants, but not as safe -- will not?

17 So we go to 80, maybe we'll go beyond that later. I
18 just don't see how the regulatory system is self consistent that way.

19 MS. UHLE: This is Jennifer Uhle. Talking about
20 whether in fact a licensees do have PRAs, I mean part of a decision for
21 rulemaking is of course is something already in place voluntarily. And
22 in our recommendation one paper, we did highlight that voluntary
23 measures are acceptable provided they are updated.

24 And that we can make sure that these tools are being
25 used. And in the case of PRA, our regulatory system uses, for the
26 operating reactors, not the new plants, uses PRA throughout our

1 regulatory system in the reactor oversight process, in the industry
2 trends process, in the looking or accident sequence precursors, in our
3 backfit determinations, in our issue --

4 COMMISSIONER APOSTOLAKIS: And I agree with
5 all that.

6 MS. UHLE: in our generic issue program. So part of
7 the staff's view is that we feel that PRAs are being used for today's
8 plants.

9 COMMISSIONER APOSTOLAKIS: And I would like
10 to know the reasons the Commission made it a requirement of Part 52.
11 Because we would be doing those things also for the new reactors.
12 And yet the Commission felt that now it would be a requirement.

13 I'm bothered by this inconsistency, but I don't think we
14 can resolve the issue today. Thank you.

15 CHAIRMAN MACFARLANE: Anybody else? No?
16 Okay. In that case, I will thank the panelists, both the external
17 panelists, and the staff very much for their presentations and for the
18 discussion. And we are now adjourned.

19 (Whereupon, the above-entitled proceeding was
20 concluded at 12:15 p.m.)

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of)	
)	
NEXTERA ENERGY SEABROOK, LLC)	DOCKET NO. 50-443-LR
(Seabrook Station, Unit 1))	
)	
(License Renewal))	

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[Original signed by Clara Sola]
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Dated at Rockville, Maryland,
this 28th day of May 2014