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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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637TH MEETING

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

(ACRS)

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THURSDAY

OCTOBER 6, 2016

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ROCKVILLE, MARYLAND

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The Advisory Committee met at the Nuclear Regulatory Commission, Two White Flint North, Room T2B1, 11545 Rockville Pike, at 1:01 p.m., Dennis Bley, Chairman, presiding.

COMMITTEE MEMBERS:

DENNIS C. BLEY, Chairman

MICHAEL L. CORRADINI, Vice Chairman

PETER RICCARDELLA, Member-at-Large

RONALD G. BALLINGER, Member

CHARLES H. BROWN, JR., Member

MARGARET CHU, Member

JOSE A. MARCH-LEUBA, Member

DANA A. POWERS, Member

HAROLD B. RAY, Member

JOY REMPE, Member

GORDON R. SKILLMAN, Member

JOHN W. STETKAR, Chairman

MATTHEW W. SUNSERI, Member

DESIGNATED FEDERAL OFFICIAL:

KENT HOWARD

ALSO PRESENT:

BENJAMIN BEASLEY, NRR/DLR

THOMAS COUTU, Entergy

ALAN COX, Entergy

YOIRA DIAZ-SANABRIA, NRR/DLR

BART FU, NRR/DLR

JIM HALLENBECK, Entergy

ALLEN HISER, NRR/DLR

DAVID LACH, Entergy

TUAN LE, NRO

TIMOTHY LUPOLD, NRO

JIM NADEAU, Entergy

GREG PICK, Region IV*

ANDREW PRINARIS, NRR/DLR

EMMANUEL SAYOC, NRR/DLR

ANDREW TAYLOR, Entergy

TAM TRAN, NRR/DLR

ANDREA D. VEIL, Executive Director, ACRS

GARRY YOUNG, Entergy

*Present via telephone

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

2 1:00 p.m.

3 CHAIRMAN BLEY: The meeting will now come
4 to order. This is the first day of the 637th meeting
5 of the Advisory Committee on Reactor Safeguards.
6 During today's meeting, the Committee has already
7 considered preparation for and our meeting with the
8 Commission this morning.

9 We will continue this afternoon with the
10 Grand Gulf Nuclear Station Unit 1 license renewal
11 application, followed by the review of Reg Guide 1.26,
12 Rev 5, Quality Group Classifications and Standards for
13 Water, Steam and Radioactive Waste-Containing
14 Components of Nuclear Power Plants, and finally
15 preparation of our ACRS reports.

16 This meeting is being conducted in
17 accordance with the Federal Advisory Committee Act.
18 Mr. Kent Howard is the Designated Federal Official for
19 the initial portion of the meeting. There is a
20 telephone bridge line. To preclude interruption of
21 the meeting, the phone is placed in a listen-in mode
22 during presentations and committee discussions.

23 A transcript of portions of the meeting is
24 being kept, and it is requested that the speakers use
25 one of the microphones, identify themselves and speak

with sufficient clarity and volume so they can be readily heard. I also want to make you aware that this meeting is being webcast, and provides the ability to view our presentation slides on the web.

Those of you on the bridge line may want to do that, and you can dial into the bridge line or connect through the NRC's public meeting website and click on the link. It normally works, and from what I've heard and seen, heard, the audio is usually better on the bridge line than it is on our -- I'm sorry, better on the webcast than it is on our bridge line. If you have trouble, you can call our office for assistance.

We will now take up our review of the Grand Gulf license renewal. I'm Dennis Bley, Subcommittee chairman for the Grand Gulf Nuclear Station Unit 1 license renewal review. This afternoon, we will hear presentations from the Division of License Renewal and the applicant, Energy Operations Incorporated. The entire meeting will be open to public attendance.

We will now proceed with the meeting, and I welcome and call upon Mr. Ben Beasley to begin the presentation. Ben.

MR. BEASLEY: Thank you Chairman Bley. I am the Acting Deputy Director for the Division of License Renewal and with me at the table is Yoira Diaz.

She is the branch chief of Projects Branch 1, which is responsible for the safety reviews of license renewal applications.

Presenting for the NRC today will be Emmanuel Sayoc, the License Renewal Safety Project Manager for Grand Gulf, and also behind me and in the audience are members from the Division's Technical Review Team. We look forward to a productive discussion today, while presenting our safety evaluation report for Grand Gulf Nuclear Station Unit 1.

We documented the resolution of four open items in the final SER issued in April of 2016, and presented these resolutions during the Subcommittee meeting in May. During our presentation today, the staff will discuss follow-up items and review the staff's open item resolution.

At this time, I'd like to turn the presentation over to Entergy and the Director of Regulatory Assurance and Performance Improvement, Thomas Coutu, to introduce his team and begin their presentations.

CHAIRMAN BLEY: It's down at the bottom.

MR. BEASLEY: It's down at the bottom where it says "push."

1 CHAIRMAN BLEY: Push on it.

2 MR. COUTU: I think I was successful. So
3 I see a lot of electronics plugged in. Do we need to
4 say anything about Samsung phones before we get
5 started? Before the meeting, Mr. Powers suggested
6 that you might ask some tomfoolery questions. So I'm
7 Tom, and I am the Director of Regulatory Assurance and
8 Performance Improvement at Grand Gulf Nuclear Station.
9 To my light is Jim Nadeau. He is our Manager of
10 Regulatory Assurance.

11 To my right is Jim Hallenbeck. He's
12 Manager of Design Engineering. Mr. Garry Young is here
13 supporting us for license renewal, and we have a couple
14 of other folks on the perimeter. Mr. David Lach. I
15 believe he's behind you, behind some of you back in the
16 back. Andrew Taylor, who is Supervisor of License
17 Renewal. I'm sorry, David is the Fleet Project Manager
18 of License Renewal.

19 Andrew Taylor is the Supervisor of License
20 Renewal, and Alan Cox is a senior consultant and those
21 two gentlemen are over here to the right. So the agenda
22 will start very briefly, site description and plant
23 status, licensing history.

24 We will talk about major equipment
25 upgrades that have been made at the plant. We'll talk

about the license renewal project and as was spoken to earlier, we will speak to the closure of previous open items, and we'll speak with follow-up items, questions that were left in the Subcommittee. So we'll talk about that, and then we'll open for additional questions.

So Grand Gulf is -- we say located on the Mississippi River. It's actually about a mile from the Mississippi River, southwest of Vicksburg, Mississippi. It is a General Electric BWR-6 Mark III containment with Siemens turbine generator, closed circulating water system with both natural and forced draft cooling towers, and in February --

Well, in 2012, we did a 15 percent EPU uprate. So extended power uprate at the site, bringing the current license thermal power to 4,408 megawatts thermal, and our staff complement is approximately 600 folks.

Plant status for currently in a forced outage, the plant is shutdown at this time. The last refueling outage was Refueling outage 20, which was in the spring of 2016. Our next scheduled refueling outage is Refueling Outage 21, which is in the spring of 2018. We are on a two year fuel cycle.

MEMBER POWERS: What's your forced

1 outage?

2 MR. COUTU: I'm sorry?

3 MEMBER POWERS: What's your forced

4 outage?

5 MR. COUTU: We had shut down to repair a

6 residual heat removal pump. It failed its performance

7 test, its surveillance test, and we elected to stay shut

8 down to address some other issues at this time.

9 MEMBER POWERS: Okay.

10 MR. COUTU: Okay. Jim, you want to cover

11 the licensing history?

12 MR. HALLENBECK: Yes. So construction

13 permit was issued in September of 1974, with an

14 operating license following that in November of 1984.

15 The plant actually began commercial operation in July

16 of 1985. The license renewal application was

17 submitted November 1st, 2011, and the EPU license

18 amendment was in July of 2012. Our current operating

19 license expires November of 2024.

20 In terms of major equipment, and again this

21 demonstrates the desire of Entergy to really maintain

22 Grand Gulf. Significant major equipment has been

23 upgraded, and a lot of this was associated with the

24 EPU. But again, we've replaced all of our main

25 transformers. We also replaced a high pressure

1 turbine rotor and we have a schedule already to replace
2 both high pressure as well as low pressure rotors.
3 We upgraded our main generators. We added
4 some hydrogen coolers, again associated with the change
5 in main generator. Also changed out some, our fuel
6 pool cooling and cleanup heat exchangers. I'll talk
7 about the steam dryer in a little bit, and also again
8 upgraded our auxiliary cooling tower. So again,
9 significant investment in the plant by Entergy.
10 Again as part of our EPU, we increased, we
11 changed out our high pressure turbine rotor, which also
12 meant that we also had to change the inner casings, and
13 again that supported our upgrade in EPU. Auxiliary
14 cooling tower. So again, this is a little bit
15 different than most plants where we have both a natural
16 draft as well as an auxiliary cooling tower that
17 actually worked together.
18 The auxiliary cooling tower was installed
19 in 2002, and the purpose of that was to eliminate our
20 summer D rates. As part of the EPU, we added eight
21 additional cells. So the original tower had 20 cells
22 for EPU. We added eight additional cells to that
23 tower, and this last outage we replaced the fill on the
24 original 20 cells so that they're all consistent.
25 We do have plans this coming outage to

1 replace the fill on the natural draft cooling tower as
2 well. For our main generator, we installed the
3 requalified spare stater from Unit 2, and also
4 refurbished the rotor inside the generator. The other
5 thing that we did is we added new end shields and also
6 the bushing box. So again, significant investment
7 into the generator as well.
8 For our steam dryer, we identified that a
9 lot of industry experience indicated with the EPU that
10 you get induced vibration, and it also leads to high
11 cycle fatigue in some of the dryer components. As a
12 result of that, we actually designed and built and
13 installed a brand new steam dryer as part of our EPU.
14 The new dryer does meet ASME codes as well as the
15 regulatory guides.
16 MEMBER REMPE: So when you were
17 implementing the EPU, how did the predictions compare
18 with the data from the instrumentation? That was
19 always a question when we did these EPU reviews? Did
20 you have any issues?
21 MR. HALLENBECK: So we have not had any
22 issues with this dryer.
23 MEMBER REMPE: So you predicted but you
24 were measuring them and you worked well?
25 MR. HALLENBECK: Yes.

1 MEMBER REMPE: Thanks.

2 MR. NADEAU: I'll talk a little bit about

3 our license renewal project.

4 CHAIRMAN BLEY: Mic.

5 MR. NADEAU: I'm Jim Nadeau, and I'll talk

6 about our license renewal project. We've incorporated

7 lessons learned from previous license renewal

8 applications that Entergy has done. The application

9 was prepared by experienced license renewal staff,

10 which Garry will talk about in a little bit, and

11 included multi-discipline and support from groups

12 throughout our GG&S and our Entergy fleet.

13 We used NEI 95-10 guidance going through

14 the scoping and screening process, and met the license

15 renewal application format and content. We compared

16 ourselves against Revision 2 of NUREG-1802, and we've

17 considered the impacts of power uprate in this license

18 renewal.

19 MR. COUTU: Rev 2 of 1801.

20 MR. NADEAU: Rev 2 of NUREG-1801.

21 MR. COUTU: That's correct.

22 MR. NADEAU: I apologize for --

23 MR. COUTU: That's okay.

24 MR. NADEAU: As was talked about in the

25 opening, we did have prior open items that are now

closed out. One was one time inspection small bore piping program, our service water integrity program had an open item, future review of operating experience for aging management programs was an open item, and the neutron fluence calculation methods.

These have all been since closed out and prior to the Subcommittee meeting that we had previously. The final SER was issued September 2016 with no open items and no confirmatory items. In final SER, we got 44 aging management programs.

Ten of those programs are new programs, and we have 35 license renewal commitments which we'll be tracking in our equipment management process. At this time, I'll turn it over to Garry Young to talk about our license renewal.

MR. YOUNG: Okay. I'm Garry Young. I'm part of the fleet organization supporting license renewal for all of the Entergy plants, and so on this part of the presentation, I'm talking about the way we handle our commitments for license renewal. We use a fleet-wide approach. In other words, we have the same program for managing commitments at all of our sites.

It's based on an NEI guidance document that's been endorsed by the NRC, and the NRC does an inspection of the commitment management program on a

1 three year frequency, and the last inspection was done
2 in 2015 and it was found to be acceptable for use at
3 all of our sites.
4 We have a lot of experience with license
5 renewal. We started doing license renewal projects
6 back in 1999. So we've gone through all of our plants
7 up until now. We've got Grand Gulf and then we're going
8 to be doing River Bend, Waterford in River Bend in the
9 future. We're still working on it.
10 We use that experience and knowledge from
11 all of these projects. On this project, we took the
12 lessons learned and applied them. So on our aging
13 management programs, for example, we have some of these
14 programs are fleet programs and therefore Grand Gulf
15 is benefitting from the experience that we have from
16 our earlier projects.
17 Some of the enhancements that we've
18 identified for Grand Gulf are things on programs such
19 as our 90Q cable inspection program, which we do have
20 a fleet procedure and it has been already implemented
21 at our other sites, some of our other sites, and
22 therefore we've learned some lessons from that and we
23 are applying them to Grand Gulf.
24 Once we get to the point of actually doing
25 the inspections at Grand Gulf, we will use those fleet

1 procedures and guidance and make plant-specific
2 applications at Grand Gulf. So you know, using our
3 operating experience program, our corrective action
4 program and our commitment management program, all of
5 that is based on a fleet approach and is being applied
6 at Grand Gulf. So that's all I've got on that part of
7 the slide.
8 CHAIRMAN BLEY: Okay Garry, before you go
9 on with this one, something related -- oh, I'm sorry.
10 I was looking at the wrong slide. Go ahead.
11 MR. YOUNG: Next one? Okay.
12 CHAIRMAN BLEY: No. It was on -- you had
13 something on the past one?
14 MEMBER POWERS: What I wanted to ask him
15 about is fleet experience here. You've got a lot of
16 these license renewals. Every single one of them you
17 come in and you say okay, I've got 44 aging management
18 programs, 25 of them are new. The rest of them are
19 extensions of old programs and I'm going to carry them
20 out.
21 But the -- I mean you're going to have
22 people carry these out, but they were full time busy
23 before. How do they carry out these new programs?
24 MR. YOUNG: A lot of the times we'll
25 characterize a program as a new program. Like for

1 example buried piping program. There's actually an
2 existing buried piping program that we're making
3 changes to it, to the point that it was -- it made sense
4 to call it a new program in the application, to allow
5 the NRC review to proceed more efficiently.
6 But we are doing a lot of those inspections
7 already under an NEI initiative. So even though we
8 characterize some of these as new programs, many of them
9 are either based on existing program or there's some
10 activity already underway. But we are committed to
11 adding any staffing that we need. For example, our
12 one-time inspection.
13 That's a program we only do for license
14 renewal, you know, toward the end of the 40 years. We
15 bring in people to do that, people that have done these
16 inspections at other sites. So it does not put a burden
17 on the current staff, and again we get the experience
18 of having done it at our other sites at our older units.
19 MR. HALLENBECK: And a lot of the programs
20 are actually feeding back onto existing ones, and if
21 we use the example of the buried piping --
22 MEMBER POWERS: If you make me fill out
23 another piece of paper and I'm already filling out 50,
24 I mean it's only a two percent increase, but there are
25 straws that break the camel's back. So I'm just kind

1 of wondering what the experience is. Are these aging
2 management programs causing you to add staff or --
3 MR. YOUNG: They have not -- at the other
4 sites that are older, we have not seen a significant
5 additional burden on the site. There is a trend of as
6 the plants get older, there's certainly a trend of
7 having to do more and more to do the inspections,
8 examinations. But that trend was already underway
9 before we started the license renewal project.
10 MEMBER POWERS: Okay, okay, good.
11 Thanks.
12 MR. HALLENBECK: And Entergy is looking at
13 staffing.
14 MR. YOUNG: Right.
15 MR. HALLENBECK: And we are looking at
16 increasing staffing as well.
17 MEMBER POWERS: I was just curious. I
18 mean you've got a wealth of experience here, and it's
19 always concerned me when you start adding, adding work
20 and having been to many of your sites, I think your folks
21 were pretty busy even before you added work. So now
22 I'm wondering Yes, how this all works out. Oh, it's
23 good. Thanks.
24 CHAIRMAN BLEY: Now before you go through
25 this slide, at our Subcommittee meeting some issues

1 came up about containment leak rate. I understand
2 there was some interaction between you folks in the
3 staff on this and a few day ago you submitted a document
4 to the staff about this area.
5 As you go through this, can you explain
6 what, what happened and what you're doing about that
7 issue?
8 MR. YOUNG: Okay, okay.
9 CHAIRMAN BLEY: Thanks.
10 MR. YOUNG: Okay. On this slide, this is
11 a new item that we did not discuss at the Subcommittee
12 meeting because it's occurred since then, and what
13 happened was did a license amendment earlier this year
14 to adopt the newer version of the NEI guidance document,
15 the Rev 3A on the containment leak rate program.
16 That was a license amendment, I think a
17 tech spec change involved. That was processed earlier
18 this year. Then here recently, it was recognized that
19 the GALL Rev 2 program that we have -- that we have in
20 our application referenced the NEI-9401 Rev 2. So
21 that's when it was recognized that there is a
22 discrepancy between what was in the SER and in our
23 application versus the current licensing basis at the
24 plant.
25 So we submitted a letter identifying these

1 two exceptions, and I think yes, the exceptions are to
2 these two elements of the GALL Rev 2 program, which in
3 GALL Rev 2 recognizes the Rev 2 of the NEI document.
4 We're now using Rev 3. So we identified
5 that as an exception in element 5 and 7 of the GALL
6 program, and that our basis is the license renewal
7 application that was reviewed and approved by the NRC
8 earlier this year.
9 So that was submitted. We discussed it
10 last week with the staff and it was -- actually the
11 letter was sent Monday of this week. Again, I think
12 the staff I think will have more to say on that. That's
13 the history on this. Now the discussion at the
14 Subcommittee meeting involved some NRC inspection
15 report that was done several years ago, and I can't
16 remember the date. It seems like it was 2012.
17 CHAIRMAN BLEY: It was 2012.
18 MR. YOUNG: It was 2012.
19 CHAIRMAN BLEY: It was an audit report.
20 MR. YOUNG: Okay, an audit report. We
21 went back and looked and our program, this change that
22 we're offering here was not based on any problems with
23 the aging management program or with the containment
24 leak rate testing program.
25 It was based on using newer guidance that

1 was available to us, to address some inspection
2 frequencies, that sort of thing. The earlier audit
3 report identified some issues with I think -- I can't
4 remember the term that they used, but the
5 effectiveness, I think it was, of the program.
6 We did go back and look at that on our
7 program and we found that at least in the recent history
8 of this program, we're not having any issues with our
9 containment leak rate program. We're finding things,
10 we're in good shape. There's no effectiveness issues
11 and the regional inspectors have confirmed that in
12 their review. So does that address your --
13 CHAIRMAN BLEY: Yes. Thank you and we'll
14 look to hear from the staff on this point too.
15 MR. YOUNG: Okay, okay. So now back over
16 to Jim.
17 MR. HALLENBECK: All right. So again, a
18 follow-up question from the Subcommittee, and I think
19 the question was raised earlier about two manhole sumps
20 that failed and were identified with water covering the
21 cables. So those were pumped out. Those cables were
22 tested and determined to be satisfactory.
23 We also have a program that tests our
24 cables on a six year basis, and we also have in place
25 a monthly inspection of manholes, to make sure that

1 there's no water in the manholes. On a couple of them,
2 we have even established solar powered, where we didn't
3 have the ability to run electricity. So we have solar
4 powered pumps that then come on and make sure these
5 manholes are dry.
6 The other thing is that the cable was
7 actually designed and specified to be in buried
8 applications, and there it is acceptable to be wetted.
9 MEMBER SKILLMAN: If those solar powered
10 pumps are on safety-related manholes, are the solar
11 powered pumps safety related?
12 MR. HALLENBECK: They're actually the
13 solar powered pumps are not on safety-related manholes.
14 They were actually procured at Home Depot.
15 (Laughter.)
16 MEMBER SKILLMAN: I'm not averse to
17 putting those on -- I was just curious, because we're
18 going to talk Reg Guide 1.36 here in a few minutes. So
19 it's kind of the same kind of thing.
20 MR. HALLENBECK: Yes. They're not on the
21 safety-related.
22 MEMBER SKILLMAN: That was a curiosity
23 question, thank you.
24 MR. HALLENBECK: All right. So the next
25 one is on, a question on the cathodic protection status.

1 So again, our cathodic protection program did have an
2 identified failure back in 2012. Since then, that
3 rectifier was replaced and we have had a good
4 performance on that system ever since. We also do have
5 plans in place to add additional rectifiers and anode
6 beds and coming up shortly.
7 MR. NADEAU: So to talk about our license
8 renewal commitments, all commitments are tracked in our
9 station commitment management process, and as Garry was
10 talking about, the implementation of any new programs,
11 enhancements or enhancements to existing programs will
12 be managed through this process.
13 In conclusion, Entergy -- we're managing
14 the effects of aging in accordance with 10 CFR 54.1,
15 and Entergy has evaluated our time-limited aging
16 analyses and that required evaluation under 10 CFR
17 54.1. We are committed to the long term safe operation
18 of the plant and maintaining it for the future.
19 CHAIRMAN BLEY: Jim, I have a question and
20 I don't know who I should direct this to. Maybe it's
21 somebody over here. We blew past the open items kind
22 of quickly and I didn't jump on it. The vessel fluence
23 issue seemed to add at least a year or more to this
24 interval of two years.
25 I wonder if you could give us a brief

1 overview. I've studied the RAIs associated with that
2 Tom and your response it was a fairly complex issue to
3 get worked out. If you'd give me a summary of what were
4 the issues and what did it take to work them out, I would
5 appreciate it.
6 MR. NADEAU: Dennis, I'll handle that,
7 okay. So the fluence calculation methodology, we had
8 had a fluence calculation methodology prior to EPU that
9 was made by MPR, and when we went to our extended power
10 uprate, we contracted out with General Electric to do
11 the fluence methodology, okay.
12 CHAIRMAN BLEY: Let me interrupt you
13 there, because there were a lot of questions about --
14 there were places at least where there was like a factor
15 of a thousand difference in the calculations under one
16 method than the other. Did you ever actually resolve
17 what was causing that difference?
18 MR. NADEAU: Yes, and I'm going to get
19 there because that's -- okay. So the first version was
20 MPR, we'll call it Rev 2 for now.
21 MR. COUTU: MPM.
22 MR. NADEAU: MPM. I'm sorry MPM, which
23 was a 2D methodology. Also the GE methodology was a
24 2D, two dimensional methodology. When the NRC looked
25 at our responses for license renewal, they said hey,

1 you're using two different methodologies over this time
2 period. That doesn't make any sense. So the RAI came
3 back and said tell us, you know, the single methodology
4 that you're doing or tell us how these things make sense
5 together.
6 After looking around in the industry, MPM
7 had developed a three dimensional technology for doing
8 the calculation, which we thought was a better
9 technology and so we decided to go with that. That made
10 a big difference in regions above and below the belt
11 line area.
12 So there was, there was a big difference
13 in those methodologies, between a three dimensional and
14 a two dimensional check. We do have a commitment to
15 go and do some reactor vessel sampling, to confirm the
16 methodology. The actual methodology has been, you
17 know, accepted and reviewed, but we are going to make
18 sure that it's as accurate as possible.
19 So we do in our next outage, which is in
20 2018, we're going to go in and do some samples to confirm
21 that the neutron fluences, what we thought, adjust the
22 calculations.
23 CHAIRMAN BLEY: Okay, that's good. I
24 think I understand now. You've gone to the 3D, and I
25 think there was one place in there where it asked you

at the point, and this is just for information if we've gone to a single method now, at the point where you switch from one method to the other, did the fluences match up? They look like they were close not exactly the same because -- was I right in that memory?

MR. NADEAU: That is my memory also.

CHAIRMAN BLEY: I think it was within a factor of two, but then it took off very differently after that. Okay. And so at the next refueling, you'll get a look at how this fluence calculation is tracking?

MR. NADEAU: That's correct.

CHAIRMAN BLEY: Okay, thank you.

MEMBER REMPE: When you went to the 3D method and it was different, was it higher or lower, the calculations?

MR. NADEAU: In the belt line area, they matched up fairly well. In the areas above and below the belt line there were differences, and the size of the belt line changed.

MEMBER REMPE: Okay, and the differences though were higher or lower? I mean was the newer method more conservative or less conservative, or I guess you don't know what's right. But which, are the predictions higher or lower? That's what I'm trying

to learn.

MR. NADEAU: Garry, can you help me out here?

MR. YOUNG: Yes. They were slightly higher, and that's why the belt line region expanded, because we went over the threshold. So they were slightly higher in the regions above and below the core.

MEMBER REMPE: Okay, thank you.

MR. YOUNG: Okay.

MEMBER STETKAR: I had a question since, you know, we go through this really quick. You've got a slide that says your installed cables are rated for wetting. I didn't -- I was searching for that in the license renewal application, and I haven't got to the right section so I'll just ask you.

It's unusual to find cables that are actually rated for wetting. They're kind of special cables, and I haven't seen many power plants that actually have those cables. Are your cables actually different? Are they rated for wetting?

MR. YOUNG: In the purchase specification, we specify that they would be installed in submerged locations. So they're the same cables that you'll see in a distribution system for a utility that has underground cables. They are not qualified

1 per NRC requirements such as EQ. So they're not
2 qualified for submerges, but they were designed for it.
3 So they're used in a location that they were designed
4 for commercially.
5 MEMBER STETKAR: And is that for all of
6 your in scope underground cables?
7 MR. YOUNG: I believe yes. There's the
8 same specification for all of our underground cables,
9 yes.
10 MEMBER STETKAR: Huh. It's different
11 from most plants.
12 MR. YOUNG: Yes. It doesn't mean any sort
13 of regulatory requirement for being "qualified," but
14 it was a specification in the design. So it's not just
15 a regular cable that's been buried. It is designed for
16 underground service.
17 MEMBER STETKAR: Okay, thank you.
18 MEMBER SUNSERI: So as a follow-up to
19 that, are there any splices that are in those affected
20 area where they could get wet?
21 MR. HALLENBECK: I don't know.
22 MEMBER SUNSERI: Because oftentimes the
23 splice is not as durable as the jacket insulation.
24 CHAIRMAN BLEY: Gentlemen, thank you. I
25 guess we'll move to the staff.

1 (Off mic comments.)
2 MR. BEASLEY: We will be covering the
3 topics that you mentioned, the change in leak rate
4 license containment and the open items.
5 CHAIRMAN BLEY: Good, and we're going to
6 address that 2012 audit report?
7 MR. BEASLEY: I don't know if we
8 specifically have that in our presentation.
9 CHAIRMAN BLEY: Are you going to address
10 why it's no longer applicable? What's happened since
11 then, so that we have more confidence than your
12 inspector had back when you did the audit?
13 MR. BEASLEY: We'll certainly do our best
14 to answer your questions.
15 CHAIRMAN BLEY: Thank you.
16 MR. BEASLEY: So we'll yes, go through the
17 presentation and answer your questions as we get to that
18 point.
19 (Pause.)
20 MR. SAYOC: Good afternoon Chairman Bley
21 and members of the Advisory Committee on Reactor
22 Safeguards. My name is Emmanuel Sayoc. I'm the
23 license renewal manager for -- safety project manager
24 for the Grand Gulf Nuclear Station Unit 1, license
25 renewal safety review.

1 Here with me today to discuss the review
2 of the Grand Gulf license renewal application
3 documentation and the final safety evaluation report
4 which was issued on April 4, 2016 and revised after the
5 ACRS Subcommittee meeting on May 5, 2016.
6 Joining me here at the table today are Dr.
7 Alan Hiser, senior level advisor, technical advisor,
8 and Mr. Tam Tran DLR, safety project manager running
9 the slides. On the telephone conference I have Mr.
10 Greg Pick, senior reactor inspector from Region IV who
11 led the 7102 inspection.
12 Seated in the audience are members of the
13 technical staff who participated in the review of the
14 license renewal application and conducted on-site
15 audits.
16 Next slide. I will begin the presentation
17 with a general overview of the staff's review. I will
18 next discuss updates to the staff's safety evaluation
19 report or SER. Finally, I will review the closure of
20 the four open items and end with the staff's
21 conclusions.
22 Next slide. Entergy submitted a license
23 renewal application or LRA for Grand Gulf in October
24 2011. Staff issued a safety evaluation report or SER
25 with open items in January 2013. The staff closed four

1 open items and discussed the resolution of those items,
2 and issued a final safety evaluation report in April
3 2016. That was presented to the ACRS Subcommittee on
4 License Renewal in May 2016.
5 Next slide. The staff conducted in-depth
6 technical reviews in accordance with the SRP LR and 10
7 CFR Part 54 and issued requests for additional
8 information or RAIs. The staff performed its review
9 of the Grand Gulf license renewal application and
10 identified four open items related to one-time
11 inspection of small bore piping, service water
12 integrity, operating experience and neutron fluence.
13 These items were resolved prior to the May
14 2016 Subcommittee meeting. As part of our process, our
15 April 2016 final SER was updated into a September 2016
16 version that was submitted to the ACRS. This included
17 clarifications to address comments from the ACRS
18 Subcommittee, the applicant and the staff.
19 Subsequently, the applicant amended their
20 USFAR supplement and containment leak rate program
21 descriptions in the license renewal application.
22 Accordingly, the staff updated its evaluation of said
23 program and corresponding sections of the SER. I will
24 go over in more detail the revised sections of the SER
25 later in my presentation.

1 Next slide. The LRA described 44 aging
2 management programs, 34 of which are existing and ten
3 are new. The slide identifies applicant's disposition
4 --
5 CHAIRMAN BLEY: Does your chart here
6 include those two new exceptions we heard about? Or
7 you don't have exceptions on your --
8 MR. SAYOC: That's -- these numbers
9 reflect the containment leak rate program, which now
10 has an exception.
11 CHAIRMAN BLEY: Okay, as is. Okay.
12 MR. SAYOC: That's right. The slide
13 identifies applicant's disposition of the AMPs, and the
14 resulting deposition in the final SER as a result --
15 as a result of the staff's review. Two plant-specific
16 AMPs were provided. All with exception of the
17 plant-specific AMPs were evaluated by the staff for
18 consistency with GALL report Rev 2.
19 We note one difference from what we
20 presented from the ACRS Subcommittee, in that the
21 containment leak rate program was classified as
22 consistent with exception, based on implementation and
23 inclusion into the current licensing basis of a
24 February 2016 license amendment request on containment
25 leak rate testing.

1 Overall, the staff concluded that 16 AMPs
2 were consistent with the GALL, 20 were consistent with
3 enhancements, three were consist with enhancements and
4 exceptions, three were consistent with enhancements
5 and -- I'm sorry. Three were consistent with
6 exceptions, three were consistent with enhancements
7 and exceptions and two are plant-specific. Next
8 slide.
9 MALE PARTICIPANT: One was
10 plant-specific.
11 MR. SAYOC: Two were plant-specific.
12 CHAIRMAN BLEY: Okay. Your slide up here
13 -- take a look on right down here in front of you.
14 MR. SAYOC: Yes. We had one
15 plant-specific under new programs and then another
16 plant-specific --
17 CHAIRMAN BLEY: Oh up above. Okay, got
18 you. Thank you.
19 MR. SAYOC: Okay. Containment leak rate
20 program. In its review documented in April 2016 SER,
21 the staff found out the containment leak rate program
22 consistent with corresponding program elements of GALL
23 Report AMP XI.24. As submitted, the LRA stated that
24 the program is in accordance with the provisions of 10
25 CFR Part 50, Appendix J, Option B for Types A, B and

1 C leak rate testing that will be implemented based upon
2 the criteria of Reg Guide 1163, performance-based
3 containment leak rate, I'm sorry, leak testing program,
4 NEI-9401, Revision 2A, Industry Guidance for
5 Implementing Performance-Based Options for 10 CFR Part
6 50 Appendix J, and ANSI 50.8-1994, Containment System
7 Leakage Testing Requirements.
8 On February 17th, 2016, the staff approved
9 a Grand Gulf license amendment request to adopt
10 NEI-9401 Revision 3A, subject to specific conditions
11 and with partial implementation of the testing criteria
12 of ANS/ANS 56.8-2002, Containment System Leakage
13 Testing Requirements. These documents, in
14 conjunction with Reg Guide 1.163, are the implementing
15 documents for Types A, B and C leak rate testing.
16 The staff noted that based upon NRC
17 approval and inclusion into the current licensing basis
18 of this Grand Gulf license amendment, acceptance became
19 apparent with respect to the applicant's containment
20 leak rate program and the GALL Report MXI.S4,
21 particularly with the frequency of leak rate testing.
22 In addition, inconsistencies were noted
23 between Grand Gulf's program implementation and
24 corresponding USFAR updates and containment leak rate
25 program descriptions in the LRA, Sections A-15 and B-15

1 respectively.

2 MEMBER STETKAR: Emmanuel, before you

3 switch gears there, my interpretation of what we've

4 heard this afternoon is that what's been done on the

5 containment leak rate program changes, the recent

6 changes are I'll call them primarily administrative in

7 nature.

8 During the Subcommittee meeting, we had

9 quite a bit of discussion about the fact that a staff

10 audit performed in 2012 identified conditions where,

11 and I'll quote from the audit report.

12 "Following a review of the applicant's

13 operating experience database and the LRA operating

14 experience program element, the staff noted that the

15 containment leak rate program lacks effectiveness in

16 its implementation." There was a discussion in the SER

17 about the fact that Grand Gulf had performed a

18 self-assessment in 2009. It revealed that there was

19 a decline in performance in the leak rate testing, and

20 it made improvements in the --

21 And yet the audit report was done more than

22 two year after that self-assessment, and still

23 concluded that it wasn't effective. So what I'm

24 curious about now is why is the staff in 2016 -- what's

25 transpired in the last four years that gives the staff

1 confidence that indeed leak rate testing will be done
2 appropriately, that this whatever led to the lack of
3 confidence, if I can call it that, in the way Grand Gulf
4 was conducting business? What's improved?
5 MR. SAYOC: Yes.
6 MEMBER STETKAR: Do you have tangible
7 evidence that in fact things have improved, or is it
8 simply that they're committing to follow some program?
9 MR. SAYOC: Certainly you definitely
10 bring up a great point. The audit report, which you're
11 referring to, referred to some preliminary findings at
12 the time. You're correct in that there were some
13 studies that were done and follow-up actions, and to
14 describe that I actually have the technical subject
15 matter expert on that area, Andrew Prinaris, who can
16 describe what the staff has done since then. Andrew.
17 MR. PRINARIS: I'm Andrew Prinaris, and
18 here is the events how they've transpired during the
19 audit. I went to the audit and obviously we do an
20 exhaustive review of the operating experience, and one
21 of the documents of the review indicated in the
22 self-assessment exactly what you quoted, lax
23 effectiveness in implementation.
24 I hated to discuss this with the program
25 owner. Unfortunately, the program owner, during the

1 four or five days that I was there, was not available
2 to discuss. If you do read the SER, you will notice
3 that a lot of the discussions went over the phone and
4 RAIs were generated over the phone.
5 So in the process of doing this and all the
6 information I collected, including the very recent
7 license amendment request approval by NRC, indicated
8 there is not such an event taking place. Usually when
9 we write the exceptions, we don't go over operating
10 experience. In this case, I took the SC for the license
11 amendment request and went through the operating
12 experience once again, the very recent one, to assure
13 and make certain that things are not in the decline.
14 So if you read the update, also it
15 reinforces the decline is not in existence.
16 MEMBER STETKAR: Okay. That helps to add
17 some confidence, so I appreciate that. Thank you very
18 much.
19 MR. SAYOC: Thank you, Andrew. Finishing
20 off on this slide, on September 23, 2016 and October
21 3, 2016, the applicant submitted an LRA amendment to
22 officially detail its containment leak rate program as
23 being consistent with the GALL report, AMP XI.S4, with
24 exceptions to program elements 5, Monitoring Trending
25 and program element 7, corrective actions.

The amendment also updated the UFSAR and the AMP description to the LRA that's achieving alignment with the provisions of the February 2016 license amendment. The staff found this amendment acceptable and the staff's concerns have been resolved. Subsequently, the staff updated SER Section 303.114 to reflect the staff's evaluation.

Next slide. Now we'll discuss the resolution of the open items. The first open item was related to the one-time inspection of small bore piping program. Open Item 303133-1 was related to the applicant's review of its plant operating experience.

The staff noted that scope of the applicant's operating experience was very limited, and had only covered the last ten years of operating history. The staff issued an RAI requesting the applicant perform a complete search and review of plant operating experience, as consistent with the GALL guidance.

In response to the RAI, the applicant searched the entire history of plant operation relevant to the scope of the small bore piping program. Based on this information, the staff found that applicant has completed a satisfactory review of plant-specific operating experience covering the complete operating

1 history of the plant.
2 In this review, they identified no
3 instances of major related cracking applicable to Class
4 1 small bore piping. The staff determined that the
5 applicant's operating experience review is consistent
6 with the GALL program guidance, and that the applicant
7 has demonstrated applicability to GALL Report AMP
8 XI.M35 to Grand Gulf. Open Item 303133-1 is therefore
9 closed. Next slide.
10 MEMBER SKILLMAN: Let me ask this please.
11 That response suggests that you were able to go back
12 probably to about November of 1984. What records were
13 available that long ago to enable the conclusion that
14 the licensee went back that far?
15 MR. SAYOC: Before I bring in the subject
16 matter expert, from my understanding the sources of
17 documentation were not only industry operating
18 experience, plant operating experience, guidance from
19 the NRC and industry, event reports, root cause
20 analysis, things of that nature. Do I have Mr. Bart
21 Fu to come expound on my answer?
22 CHAIRMAN BLEY: Hi Bart.
23 MR. FU: Again, Bart Fu, DLR NRC. Based
24 on the response, the applicant, you know, did a complete
25 search of their record, including corrective action

1 reports.

2 But it did go as far as, you know, the start

3 of plant, to cover the whole operating history. What

4 else they did? Oh, LER, that covers the entire

5 history. The staff also independently did a search

6 including LER.

7 MEMBER SKILLMAN: Okay, thank you Bart.

8 Thank you Emmanuel.

9 MR. SAYOC: Okay, thank you.

10 MEMBER RICCARDELLA: Are you saying in the

11 history of operating of this plant, there's been no

12 experience with small bore cracking or leakage?

13 MR. FU: That is correct sir.

14 MEMBER STETKAR: We need to be real clear.

15 The staff was careful to say age-related. Have there

16 been any cracking due to other causes?

17 MR. FU: That is correct. The focus is on

18 age-related degradation as typically, you know, caused

19 by high cycle fatigue or stress corrosion cracking.

20 MEMBER STETKAR: I understand.

21 MR. FU: If there's a case of obvious

22 fabrication related, you know, lack of fusion no, that

23 wouldn't count. But you know, the OE search only

24 searched again, age-related. We have a very defined

25 criteria.

1 MALE PARTICIPANT: And it's also only for
2 Class 1.
3 MEMBER STETKAR: Right. We're not
4 talking -- my notes from our Subcommittee meeting, if
5 you give me a second, we're not talking about actually
6 a very large population compared to -- so 100 and --
7 at least at our Subcommittee meeting it was stated that
8 there's 195 butt welds and 408 socket welds. So that's
9 not a huge population compared to some other plants that
10 we've seen.
11 MR. SAYOC: Bart, thank you for that
12 clarification. Are there any other questions on this
13 matter? Okay. Service weld integrity. A second
14 open item pertained to the service water integrity
15 program, which corresponds to GALL Report AMP XI.M20,
16 Open Cycle and Cooling Water System. Plant-specific
17 operating experience condition reports discuss erosion
18 in a standby service water system and indicated it would
19 be included in the site's erosion procedure.
20 However, it was not clear whether the
21 service water system components were being managed for
22 erosion, because the LRA did not discuss this aspect
23 and it was not included in the on site program
24 evaluation documentation.
25 The staff issued multiple RAIs to

1 establish the susceptibility of the service water
2 system to erosion, to clarify whether the service water
3 integrity program also managed erosion and to determine
4 if the erosion procedure was cited or credited in other
5 programs that were managing loss of erosion due to
6 erosion mechanisms. I'm sorry, loss of material due
7 to erosion mechanisms.
8 In its response to the RAIs, the applicant
9 eventually added mechanisms to the service water
10 integrity program, flow accelerated conversion program
11 and the period surveillance and preventive maintenance
12 program to address the loss of material due to erosion.
13 The applicant also added new aging management review
14 items related to erosion for the associated components.
15 Accordingly, the staff found the
16 applicant's response to the follow-up RAIs acceptable,
17 which resolved the staff concerns. Open Item 303139-1
18 is therefore closed.
19 Next slide. The third open item pertained
20 to the operating experience concerning age-related
21 degradation. The staff determined that the LRA does
22 not provide specific details and issued RAIs to gain
23 information as to how the Grand Gulf Operating
24 Experience or OE program and the Corrective Action
25 Program or CAP will be used to monitor operating

1 experience related to aging on an ongoing basis.
2 In response, the applicant stated that the
3 CAP is used to address equipment degradation due to the
4 effects of aging, including when the degradation is
5 identified from information under the OE program. The
6 applicant detailed OE program sources of information,
7 described the extent of condition reviews used to
8 determine the scope of corrective actions and
9 enhancements for development of new AMPs.
10 The applicant clarified that evaluations
11 of age-related operating experience include the
12 consideration of component materials, environments,
13 aging effects and aging mechanisms. Specific codes
14 identify aging management issues in the plant and an
15 analysis was incorporated to identify and evaluate
16 adverse trends.
17 In terms of training its OE team, the
18 applicant described the scope, the frequency and
19 content of key personnel training, which particular
20 covers topics of age-related degradation and aging
21 management. Finally, the applicant outlined OE
22 reporting of plant-specific operating experience to
23 the industry, per their acceptable guidelines, event
24 reports, notices and root cause investigation reports.
25 The staff determined that the applicant's

1 programmatic activities for the ongoing review of
2 operating experience are consistent with the guidance
3 of SRPLR Section 842 and will ensure that the license
4 renewal AMPs are and will continue to be effective in
5 managing aging effects. Open Item 305-1 is therefore
6 closed.
7 CHAIRMAN BLEY: I'm sorry. As I read the
8 SER, you found that three of four aspects of operating
9 experience programs once you got more information were
10 consistent with LRA 42, but you found that the fourth
11 one, operating experience reporting, wasn't. You
12 didn't say exactly why, but you had a rationale why that
13 was okay, which seems a little different from what you
14 just told us here.
15 MR. SAYOC: The reporting --
16 CHAIRMAN BLEY: So the inconsistency, I
17 don't know what the inconsistency is. But you said
18 it's an acceptable departure because there's a
19 systematic review of plant-specific operating
20 experience and you can enhance the AMPs as you go along
21 as needed. So that's a little different than the way
22 you presented it. That's not a major issue, but I'm
23 just curious as to why that is.
24 MR. SAYOC: As far as your reporting,
25 let's see here. I don't have all the details with me,

1 but definitely the -- we found them consistent the
2 reporting guidelines, which included, you know,
3 reporting on event reports, notices, root cause
4 analyses. So there's definitely a plethora and
5 concise.
6 We found that there was a concise source
7 of different types of reporting that they're doing,
8 consistent with the guidelines. Does that, does that
9 answer your question at all?
10 CHAIRMAN BLEY: No. No, but that's --
11 it's not a big thing to push, because you've laid it
12 out much more clearly than you just stated it in the
13 SER. But go ahead, Alan.
14 MR. HISER: All I was going to say was we
15 may need to go back and do a little bit of research on
16 that specific point, of why we found it acceptable.
17 MR. SAYOC: Yes. Unfortunately the --
18 CHAIRMAN BLEY: You have a decent
19 explanation in the SER of why you found it acceptable.
20 But I was curious what the -- why it wasn't consistent,
21 because you didn't spell that out.
22 MR. SAYOC: Okay, all right. The fourth
23 open item pertained to neutron fluence evaluation. It
24 its review, the staff determined that the applicant's
25 fluence method was consistent with Reg Guide 1190, and

1 does not address the use of a method combining fluids
2 results from two different methods.
3 As a result, the staff requested that
4 applicant provide sufficient technical basis for
5 combining the fluids results, in order to ensure the
6 uncertainty analysis is adequate. Alternatively, the
7 staff requested that the applicant provide results from
8 a single method consistent with Reg Guide 1190.
9 The staff also noted that the method used
10 to perform the MPM pre-EPU fluence calculations is not
11 documented in an NRC-approved method. RAIs were
12 issued to request a detailed description of the fluence
13 calculation method and their qualification, as both
14 pertain to Grand Gulf.
15 The applicant submitted a license
16 amendment request to adopt the MPM method of
17 calculating reactor vessel neutron fluence values as
18 a single fluence method in accordance with Reg Guide
19 1190. In a separate licensing action, the staff
20 approved this method on August 18, 2015, thus
21 incorporating the method into the current licensing
22 basis of Grand Gulf.
23 As part of license amendment review, the
24 staff confirmed that the MPM method, including analytic
25 uncertainty analysis adheres to Reg Guide 1190. As

1 evaluated in Section 4.2 of the final SER, the staff
2 confirmed that the applicant adequately upgraded the
3 neutron embrittlement CLAAs using 64 EFPY fluence
4 projections based on the improved MPM method.
5 CHAIRMAN BLEY: I've got to say on this one
6 too, while I know you'd like to get out of here without
7 too much trouble, this is a really great
8 oversimplification of what went on for two or three
9 years there. The applicant gave us a bit of a story
10 of -- are you reasonably content with the way they
11 represented what happened over those couple of years
12 and how it was resolved?
13 They gave more details than you have on the
14 slide here, and the disagreements were a lot more than
15 just using two different calculational schemes. It
16 was how they -- how different they turned out to be and
17 how -- there was a lot of detail here. In any case,
18 did you find what the applicant said a reasonable
19 summary of what went on?
20 MR. SAYOC: Yes. The summary I thought
21 was pretty accurate and yes, the concerns that we had
22 were resolved. If there's any specific details or
23 anything you want as far as, you know, what transpired
24 in the staff's review, I mean I do have the subject
25 matter expert here to provide more --

1 CHAIRMAN BLEY: Unless there's something
2 different than we already heard, I don't want to go any
3 further. But if -- yes, I don't think you need to bring
4 your expert up.
5 MR. SAYOC: Okay, thank you. In
6 conclusion, on the basis of the staff's review, the
7 staff had determined that the requirements of 10 CFR
8 5429 Alpha are met in the license rule of Grand Gulf,
9 for the license rule of Grand Gulf Nuclear Station Unit
10 1. This concludes my presentation. Now if there are
11 any questions, the staff will take them at this time.
12 CHAIRMAN BLEY: Anything from the
13 committee? At this time, we're opening the phone line
14 to get any public comments from the phone line. While
15 we wait for that, is there anyone in the audience here
16 in the room who would like to a comment? If so, please
17 step up to the mic.
18 (No audible response.)
19 CHAIRMAN BLEY: Nobody's coming to the mic
20 here, so we'll -- and I think I just heard the phone
21 line open. If there's someone on the phone line who
22 would like to make a comment, please identify
23 yourselves and give us the comment.
24 (No audible response.)
25 CHAIRMAN BLEY: Okay. I guess there is no

one who wants to make a comment. In that case, we're finished with this section and thank you both to the applicant and to the staff for your presentations.

Before we take our break, I'm losing coordination here. Before we take our break, I have an announcement for the committee. Two parts. One, we've got enough new information in the last couple of days and at the meeting. Now I'm going to need a couple of hours to fix up my rudder in this area.

So we'll do that tomorrow. We have one more technical issue today. After we finish that one, we'll have a short meeting and see if there's any need for a letter in that area, and after that we'll decide about when we might adjourn the whole meeting eventually.

So don't ask me any questions about that until we finish the next technical session, and have a discussion about it afterwards. At this time, we are recessed for 15 minutes. Oh, what's it say on the -- no, it's longer.

MEMBER STETKAR: It's 3:15.

CHAIRMAN BLEY: 3:15, an hour and 15 minutes. So we're recessed for one hour and 15 minutes. Be back here at 3:15.

(Whereupon, the above-entitled matter

1 went off the record at 2:03 p.m. and resumed at 3:13
2 p.m.)
3 CHAIRMAN BLEY: We are back in session.
4 At this time, it's time to move on to Reg Guide 1.26,
5 and I will turn the meeting over to Dick Skillman. Mr.
6 Skillman.
7 MEMBER SKILLMAN: Mr. Chairman, Dr. Bley,
8 thank you. Colleagues, this regulatory guide is a very
9 important one. All the reg guides have importance, but
10 this is one that I would suggest has particular
11 importance because it is the framework that is used by
12 the NRC staff, by designers, by people at the plants,
13 by those who are designing the design certifications,
14 to identify the codes and standards that are used for
15 components that contain radioactive fluid.
16 And so this regulatory guide, along with
17 Appendix A to 10 CFR 50 that are the general design
18 criteria, and the paragraph 50.55(e) in the regulations
19 really provide the overall framework for how you
20 procure key equipment, how you might modify equipment
21 if you're doing a 50.59 in the plant or giving
22 consideration to whether a license amendment is
23 necessary.
24 So this document has very great
25 applicability to the practical users in the industry.

1 Hence, the Revision 5 is an important one, and because
2 of its important attributes, I considered it important
3 that this come before the Subcommittee, and the
4 Subcommittee determined it was important enough to come
5 before the full Committee.
6 So we are here today because of the
7 importance of this somewhat obscure document. But I
8 verify to you it is very important to the staff, to
9 applicants, to licensees and so here we are to talk
10 about it, and I'm going to ask Tim Lupold and Tuan Le
11 to please take the lead. Gentlemen.
12 MR. LUPOLD: Okay, thank you very much.
13 Good afternoon everyone. I am Tim Lupold, the branch
14 chief of the Mechanical Engineering branch. Along
15 with me is Tuan Le. He's the technical lead for the
16 revision of Regulatory Guide 1.26, Quality Group
17 Classifications and Standards for Water, Steam and
18 Radioactive Waste Containing Components of Nuclear
19 Power Plants.
20 I'd like to thank you for the opportunity
21 to discuss the quality group classification standards
22 with you today. To set the stage, Tom Scarborough and
23 Tuan Le presented the changes made to the ACRS Plant
24 Operations and Fire Protection Subcommittee on August
25 16th.

1 During the meeting, the intent of the
2 revision was an administrative change, in addition to
3 clarifying the definition of Quality Group A. We
4 explained that the intent of the revision was an
5 administrative change in addition to clarifying the
6 definition of Quality Group A, referencing the American
7 Society of Mechanical Engineers' Operations and
8 Maintenance Code for Nuclear Power Plants, referencing
9 alternate quality classification approaches that
10 exist, and referencing a risk-informed approach
11 available, the 10 CFR 50.69.
12 The Subcommittee expressed concern about
13 Quality Group D components and augmented requirements
14 that may be appropriate for some components in this
15 category, and making the quality group criteria
16 technology independent or functional oriented, as
17 opposed to the large light water reactor system-related
18 criteria that are currently in the reg guide.
19 Okay. Such that the guide could be
20 applied to advanced reactors. We have noted that we
21 intended this reg guide for revision in the next five
22 years, with the intent to endorse alternate criteria.
23 Specifically, we're looking at ANSI/ANS-58.14 and
24 would be willing to include revising the quality
25 criteria to be technology independent.

1 The Subcommittee took this under
2 consideration and recommended the Reg Guide come before
3 the full ACRS.
4 CHAIRMAN BLEY: If either you or perhaps
5 one of our colleagues can summarize the concerns that
6 were raised?
7 MEMBER SKILLMAN: Yes Dennis. The
8 question, the line of questioning that the Subcommittee
9 pursued with the staff was how does this regulatory
10 guide apply to passive plants and to novel plants.
11 CHAIRMAN BLEY: Uh-huh.
12 MEMBER SKILLMAN: Because if one looks,
13 for instance, at NuScale and asks what is containment?
14 It's not the same containment that we generally think
15 about. Containment at NuScale is a steel vessel that's
16 underwater.
17 The reactor vessel and the core are in a
18 flask, and so what should be the quality classification
19 for the components that enable that containment system
20 to function, because the matrix that is presented in
21 Reg Guide 1.26 Rev 5 retains the original matrix from
22 about 1972.
23 CHAIRMAN BLEY: So it's focused on the
24 standard LWR designs?
25 MEMBER SKILLMAN: Basically yes. But it

1 applies to components and components that contain
2 radioactivity.
3 MEMBER STETKAR: It's not just
4 radioactivity. It's auxiliary feedwater, it's
5 component cooling water. So it's not just
6 radioactivity. Is that correct?
7 MEMBER SKILLMAN: It's focused -- that is
8 correct.
9 MEMBER STETKAR: Thank you.
10 MEMBER SKILLMAN: It's focused on
11 basically all of the components that can handle
12 radioactivity. So the reactor coolant system, decay
13 heat, it will be component cooling water, service water
14 and Quality Group D will be Reg Guide 1.43, which is
15 waste disposal. But the real question was how does
16 this apply to passive plants?
17 MEMBER STETKAR: Well, let me take a
18 slightly different strain that might resonate. It's
19 not just passive plants. It's questions of suppose I
20 have -- we'll start with passive plants -- a passive
21 plant, and for that plant I have equipment that's
22 subject to regulatory treatment of non-safety systems,
23 RTNSS equipment.
24 How do these quality groups apply to RTNSS
25 equipment? Or do they? Or if I have now either a

1 passive or an active new plant for which I have done
2 what I'm supposed to do and identified a list of risk
3 important equipment that I include in my design
4 reliability assurance program, how do these quality
5 attributes apply to those things that are now risk
6 significant?
7 Or in the context, as I mentioned, of
8 50.69, where I now have safety important, risk
9 important, safety-related, less risk important,
10 safety-related --
11 CHAIRMAN BLEY: The four things.
12 MEMBER STETKAR: Yes, the four things.
13 How do they apply to those things?
14 CHAIRMAN BLEY: And the reg guide itself
15 doesn't clarify that?
16 MEMBER STETKAR: The reg guide will -- I
17 don't know --
18 CHAIRMAN BLEY: But Tim, are you going to
19 talk about this?
20 MEMBER SKILLMAN: Dennis, let me finish.
21 What happened is in its revision, Revision 5, the staff
22 proposed adding the pointer to 10 CFR 50.69, and that
23 was the toggle that started John and me down this path
24 on how does this apply to passive plants or plants that
25 use RTNSS or other applications for risk? That is the

1 center of what brought us to this meeting.
2 MEMBER STETKAR: Right now it has the
3 pointer in it, but there's a statement that just says
4 a user of Reg Guide 1.26 should be aware of the
5 differences in the safety classification process in Reg
6 Guide 1.201, 10 CFR 50.69 will be implemented.
7 CHAIRMAN BLEY: I know it's a smart thing
8 on the part of the staff to be quiet when these guys
9 are going at each other, but are you going to get to
10 the things they're talking about?
11 MR. LUPOLD: I was not planning on
12 rehashing the debate which occurred in the
13 Subcommittee.
14 CHAIRMAN BLEY: What's the view of the
15 staff of the applicability to those four categories,
16 if you will, of --
17 MR. LUPOLD: Well, it's up to the -- let
18 me just make a statement first, and we can address some
19 of those questions. At the Subcommittee meeting, I was
20 not prepared to say that -- to commit that I would pull
21 this regulatory guide back, withdraw it and expand the
22 scope of the revision at that time, especially not
23 without consulting my managers first.
24 CHAIRMAN BLEY: Sure, oh yes.
25 MR. LUPOLD: All right. After the

meeting I did confer with my management on a direction forward, and we decided to continue with the revision without the scope expansion and plan for a future revision to address the ACRS Subcommittee concerns.

CHAIRMAN BLEY: Okay.

MR. LUPOLD: Okay. Now it was -- the real question is how long would that take, and my contention was that to pull it back, address these issues, will take a considerable amount of time, because it requires a lot of review by a lot of people. We're going to have a lot of comments that we're going to have to resolve in the process.

I felt it was better to put out the reg guide now with some of the information that's in it, and then start looking at what we have to do endorse 58.14, what we have to do to come up with what I call technology neutral criteria, so you can apply it other reactors other than -- what it was really developed for initially was large light water reactors, right.

CHAIRMAN BLEY: Sure.

MR. LUPOLD: But I did not see a benefit to pull it back now, work on all that stuff, bring it back and it will be several years later to address all these things. These are not simple issues like how RTNSS is dealt with, and I don't believe that we, as

1 an NRC staff, have even determined that this is the
2 appropriate document to talk about RTNSS and augmented
3 quality.
4 This document was originally meant to look
5 at your mechanical systems and determine what your
6 design standard should be for that system, and it does
7 that. It looks at ASME Class 1, ASME Class 2, ASME
8 Class 3, B-3111, American Water Works Association for
9 tanks for Group D, things like that.
10 CHAIRMAN BLEY: Well, in truth as a
11 committee, we've been looking for the document that
12 will do this for seven or eight years now. So I
13 understand what happened in the Subcommittee. One
14 last clarification for me is where were the hooks to
15 50.69? Are they written in the reg guide, or was that
16 something that just came up in the discussion?
17 MEMBER SKILLMAN: It has been added into
18 Revision 5.
19 MR. LUPOLD: So it was added into Revision
20 5 as a reference. Obviously it's there already in the
21 regulatory guide, I mean in the regulations and if an
22 applicant --
23 CHAIRMAN BLEY: So it points you to it, but
24 it doesn't tell you how to use it?
25 MEMBER SKILLMAN: That's correct.

1 CHAIRMAN BLEY: Okay, fair enough.
2 MR. LUPOLD: Let me be --
3 CHAIRMAN BLEY: I'm sorry for the
4 diversion.
5 (Simultaneous speaking.)
6 MEMBER SKILLMAN: One other comment. I
7 want to address what John said. John is accurate.
8 This applies to more than for instance just the reactor
9 coolant system. But here's how it gets there. It
10 assigns functions in quality group classifications.
11 Quality Group A Alpha is reactor coolant system. B is
12 systems or portions of systems important to safety,
13 designed for emergency core cooling post-accident
14 containment heat removal, and post-accident fission
15 products removal.
16 That applies to B's and their isocooling
17 systems, and to P's in their decay heat removal or RHR
18 systems. So I agree with John. It applies to much
19 more than reactor coolant system and those immediately
20 attached to it.
21 But you get to those other systems based
22 on the functions of those other systems, and I would
23 be quick to say Reg Guide 1.26 has served a very, a very
24 thorough purpose in the industry, because it's kept
25 everybody aligned with regard to those functions.

1 So this is a very used and useful document.
2 Hence, at least from my view, adding in the risk option
3 should carry with it guidance for application of that
4 risk option.
5 CHAIRMAN BLEY: Okay, and if I were -- I
6 shouldn't put words in somebody else's mouth, but I
7 would suspect what Mr. Stetkar was -- would have liked
8 to have seen is something that takes the 50.69 four
9 categories and directly relates them to requirements
10 here. Is that kind of where you --
11 MEMBER SKILLMAN: Or provides principles
12 for application of 50.69.
13 CHAIRMAN BLEY: Okay.
14 MEMBER STETKAR: Because right now one of
15 the things that -- we'll let you speak eventually.
16 Quality Group C for example specifically mentions
17 auxiliary feedwater systems, you know, which is now
18 starting to get even further away from that radioactive
19 fluid. I mean you can infer things, but it starts to
20 get really, really specific in some areas about what's
21 in the scope, and yet --
22 CHAIRMAN BLEY: And actually picks up some
23 things that were not safety-related at least
24 originally, but became important from the studies.
25 MEMBER STETKAR: This says residual heat

removal from the reactor and from the spent fuel storage pool, for example, and that traditionally -- spent fuel storage pool heat removal systems traditionally have been non-safety-related in many plants. So it's got tentacles that go out in there to the non-safety-related stuff, but kind of traditional, traditional tentacles.

CHAIRMAN BLEY: I'm sorry for the diversion, Tim. Why don't you go ahead? I'm trying to catch up here.

MR. LUPOLD: All right, okay. I was pretty much finished, but just want to say that since this is a presentation to the full ACRS, and some of the individuals haven't benefitted from the presentation that took place in the Subcommittee meeting, I'm going to turn it over right now Tuan Le for a brief presentation of the reg guide and the changes.

MR. LE: Good afternoon. My name is Tuan Le.

CHAIRMAN BLEY: Use your microphone please.

MR. LE: Okay. My name is Tuan Le and today I'll just go over the update for the Reg Guide 1.26. As Tim was previously summarized, what has been

1 in the Subcommittee discussion for respect going in Reg
2 Guide 1.26, there are four categories or four area that
3 the reg guide has been updated.
4 So the first one is the staff put in
5 additional clarification for the definition of Quality
6 Group A. The second area was references to the scope
7 of ASME Code, which is incorporated by reference by
8 regulation; references to the alternate quality
9 classification approach, which is in our standard; and
10 also reference to the risk-informed alternative or
11 tentative approach that was 10 CFR 50.69.
12 So what is -- what are the applicable rule
13 and regulation for this reg guide? There are three
14 applicable rules and regulations of this reg guide.
15 The first one is 10 CFR 50.55(a), which is general
16 design criteria on quality standards and records.
17 This is a reference to the structural system and
18 components designed and fabricated -- furnished and
19 tested to quality standards commensurate with the
20 importance of safety.
21 The second one is 10 CFR 50.55(a),
22 reference to codes and standards we use for the -- all
23 technology used for the quality group and
24 classifications. 10 CFR 50.69, which is the
25 risk-informed characterization and treatment of

structures, systems and components for nuclear power reactors. So there are five area that --

CHAIRMAN BLEY: Could you advance your slides please as you go?

MR. LE: All right.

CHAIRMAN BLEY: There you go.

MR. LE: For the four area that Reg Guide 1.26 have been update, most of them are administrative and information that consists update for Reg Guide 1.26. There are no imposed new technical requirements for this reg guide. So as we were talking about the application for Reg Guide 1.26, we want Reg Guide 1.26 to be applicable for operating reactors and the new reactor designs.

The applicant or licensee may warranty a year to Reg Guide 1.26 to demonstrate compliance with the underlying NRC regulations. Methods or solutions that may differ from those described in this reg guide, maybe not acceptable if the staff reveal those information and come to conclusion that it's meeting and comply to the regulatory guidance and NRC regulation.

This through a process, the staff will verify the proposed alternative demonstration to comply with the appropriate NRC regulations. The

1 applicant and licensee have assigned a component with
2 the system, with different group product
3 classifications, where there's a specified function
4 with an example of the classification for the
5 sufficient for the AP1000, how to demonstrate that.
6 Current licensee has been cleared to use
7 the current licensing basis since they're already
8 certified and operate, currently operate, they can
9 still use the current licensing basis, but they are
10 still acceptable to the licensing requirements.
11 So as I go through to the four area of the
12 updates, I want to point out these four areas. I would
13 like to summarize them in short descriptions. So if
14 you have any question, go to full detail on that update,
15 I could elaborate with more.
16 So the first update is the classification
17 for definition of quality group. As you may know, the
18 Reg Guide 1.26 is based on 10 CFR50.55(a), required as
19 the components of reactor coolant pressure boundary,
20 because it's Class 1 component. Meet the requirement
21 of ASME Class, ASME Section 3, which is Class 1 of
22 component, ASME Code Class 1.
23 This code into the quality standard,
24 Quality A of the NRC classification system, which is
25 the highest qualification, quality group, in one of the

1 quality group. Of course, Revision of 5 Reg 1.26 is
2 provide clarification of Quality Group A in this draft
3 regulatory guidance section.
4 The second area of update was the
5 references to the scope of the ASME OM Code.
6 Originally, the OM, ASME OM Code had been incorporated
7 by reference to the regulation, the 10 CFR 50.55(a).
8 Then of course it is accepted by the NRC described in
9 the service testing program for pumps, valves and
10 dynamic restraint for other nuclear power plants.
11 The use of Reg Guide 1.26 should confirm
12 these classifications, a process that considered the
13 scope of the pumps, valves and dynamic restraints
14 specified in the ASME OM Code.
15 The third update in the Reg Guide 1.26 is
16 the references to the other quality classification
17 approach, which is referring to the ANS standard. The
18 American National Standard Institute and American
19 Nuclear Society.
20 CHAIRMAN BLEY: I think you changed your
21 slide.
22 MR. LE: So this standard here as well, as
23 we briefly discussed, the process to endorse it ANS
24 58.14 and that would be a more acceptable for staff to
25 review based on the 58.14 standard. 10 CFR 50.69 risk

1 informed categorization and treatment for structural
2 systems and components for nuclear power reactors. As
3 we previously discussed, this is the risk
4 characterization for as the risk informed
5 classification approach. That's an option that the
6 applicant can use.
7 IAEA specifies safety SFG 40, safety
8 classification of structures, systems and components
9 in new nuclear power plant are also applicable for this
10 Reg Guide 1.26.
11 The fourth area that Reg Guide 1.26 updates
12 are the 10 CFR 50.59 providing a volunteer risk informed
13 process for characterizing and treating also et cetera,
14 inspection and testing for NRC that may be used as the
15 alternative to classification, and this requires NRC
16 approval. This is described and also described in Reg
17 Guide 1.201, that guidelines for characterizing
18 systems and components in nuclear power plants
19 according to their safety significance.
20 Now that accepts the nuclear industry
21 guidance, the NEI 00-04, 10 CFR 50.59 ASC
22 categorization guidelines with the regulatory
23 permissions. So the Reg Guide 1.26 order have other
24 related guidance, which are the SRB Section 3.22, which
25 the staff use it as they review the application on the

1 measure of the classifications. Section 3.22, which
2 is the system quality group classifications.
3 Also, NUREG Section 17.5 quality assurance
4 program description, this are early site permits and
5 new licensing, new license applications. This also is
6 applicable for the -- for Reg Guide 1.26 regarding the
7 quality assurance program. As we mentioned before, I
8 looked 1.143 design guidance for radioactive waste
9 management system, structure, component installed in
10 the light water reactor nuclear power plants, also
11 applicable for Reg Guide 1.26.
12 So it's come to the summary of this update.
13 I would like Tim to summarize all these changes.
14 MR. LUPOLD: Just to wrap up the
15 presentation, Reg Guide 1.26 can and is used in
16 operating in new reactors, including the AP1000 and
17 NuScale reactors. NuScale is using it. The original
18 intent of this change was really administrative change,
19 and to clarify the Quality Group A, get the reference
20 there to 50.55(a)(c) that outlines, you know, what is
21 the reactor coolant system and basically what the
22 definition of the reactor coolant pressure boundary is,
23 which becomes then Quality Group A and ASME Code Class
24 1.
25 Refer to the ASME Code, because the ASME

1 Code actually talks about the code class equipment in
2 it. So we felt it was appropriate to have some
3 reference to the ASME OM Code here within Reg Guide
4 1.26, and reference alternate approaches that
5 applicants could request to use. Now just because we
6 reference them doesn't mean that they're approved.
7 We haven't endorsed them yet, but it lets
8 them know that there are some other things that are out
9 there that they could use if proper justification is
10 provided. Our intent at this point is to -- is to
11 publish this revision of the reg guide, and then start
12 a detailed review for ANSI/ANS 58.14, to allow to
13 endorsement of that standard.
14 We may include others, I don't know. But
15 that one right now is on my radar screen. That is a
16 reasonable document and a reasonable method to use to
17 classify your equipment and your systems, and to look
18 at the criteria for the quality group, try and make it
19 technology independent so that it can be applied to
20 other reactors such as the advanced reactors, the high
21 temperature reactors, the liquid sodium reactors,
22 etcetera.
23 Our plans are to revise that reg guide and
24 have that done in five years. We have done -- we
25 had -- I had requested that this reg guide be added to

1 the update within five years, but we're going to start
2 looking at the ANSI standard now and then move forward,
3 try and get all issues identified with the endorsement
4 of that and adopt it. So with that, I conclude our
5 presentation and really turn it back over to you.
6 CHAIRMAN BLEY: Dick.
7 MEMBER SKILLMAN: Tim and Tuan have --
8 microphone? Thank you. Tim and Tuan have really laid
9 out where they want to go with this. In brief, they
10 would like to release now and within the next five years
11 do an update, so that the updated document would weigh
12 in onto, if you will, technology neutral or guidance
13 and pointers that can be used for any type of reactor.
14 I understand that. It seems to me that the
15 question is is the document in its current form useful,
16 and I would be quick to say it most certainly is. It's
17 been used for the AP1000 passive design. I do have some
18 questions about how it's been applied in NuScale, but
19 I have every confidence that the question and
20 challenges, the questions and challenges that have been
21 posed to NuScale have forged a design that is
22 defendable.
23 So I don't have concern that there's a
24 problem with what will be the use of this revision. But
25 by adding in the pointers to the risk option, it seems

1 that the game has changed in some form of formality.
2 By embedding it in the reg guide revision, there is an
3 invitation for use of the new technology without
4 guidance.
5 That's the note that I would end on. I
6 think these gentlemen have done a fine job of presenting
7 what it is they wish to do. The document is durable
8 and useful as it is. That is the revision, Revision
9 5, but it adds an element that may considerably create
10 questions or challenges that are unanticipated.
11 CHAIRMAN BLEY: You've raised something
12 I'd like to comment on.
13 MEMBER SKILLMAN: So with that, I'm going
14 to stop. Thanks.
15 CHAIRMAN BLEY: Well, you'll be back in a
16 second. But your speech, Dick, makes me think I'm kind
17 of happy they've got the link and, you know, the way
18 many of these things have evolved is with a slight
19 invitation. People can try, but then they have to
20 bring what they've done if they move to using the
21 information in 50.69, they have to try. They have to
22 bring it and say can we do this, does this work?
23 So it's a first step, and having some
24 trials before you actually do guidance on how to do it,
25 not a bad idea. So I don't think it's bad. But there

1 might be other questions from the other members, but
2 then you have to look for public comments too.
3 MEMBER STETKAR: Yes, and I have a
4 question. You mentioned that AP1000 has used it and
5 that it's apparently referenced in NuScale, which we
6 haven't reviewed yet. I didn't take time to go back
7 and look at all of the design certifications, but I did
8 do a little searching. It seems to me in my kind of
9 informal search that indeed it's referred to in AP1000.
10 It's referred to in USABWR. It's referred
11 to in USEPR and ESBWR, and yet when I look at the
12 tabulations of the quality group assigned to specific
13 structures, systems and components and in those various
14 design certifications, I have some question about well
15 why did applicant A assign component X to quality group
16 whatever, and applicant B assigned component Y to
17 quality group different, when to me --
18 CHAIRMAN BLEY: And both were accepted.
19 MEMBER STETKAR: And both were accepted,
20 and to me I would have assigned them differently, or
21 at least the same. So have you guys looked at that at
22 all to see whether there indeed is consistency among
23 -- regardless of risk informed or however people make
24 these decisions, and they point to risk information.
25 They point to a lot of things in their applications.

1 Have you looked at whether or not people
2 are actually applying the guidance consistently in
3 terms of their quality group assignments within their
4 certified designs, because there is that big tabulation
5 in Chapter 3 I think it is.
6 MR. LUPOLD: When we do a review, we look
7 at the design of the plant and we compare it to the
8 criteria, which is in Reg Guide 1.26.
9 MEMBER STETKAR: I'm not asking my
10 individual plant here doesn't meet the criteria when
11 I'm looking at it. I'm looking at across the board is
12 there consistency.
13 MR. LUPOLD: We look at each plant
14 individually and make sure that each plant meets a
15 minimum standard requirement. We do not go through and
16 look at make sure that the same level at every plant
17 is applied. We make sure they meet the minimum
18 requirement that we have established. So there may be
19 one plant that establishes a higher quality
20 classification for a system versus another plant.
21 That doesn't mean that it had to be done
22 that way, and that's about all that I can actually
23 comment on that.
24 MEMBER RICCARDELLA: Tim, I'm sorry. I
25 wasn't at the Subcommittee meeting. Your first bullet

1 says it's used for operating plants. How are these --
2 I mean aren't the quality groups already established
3 for all the equipment in an operating plant? How is
4 this used for an operating plant?
5 MR. LUPOLD: They're actually used when
6 those plants were designed also. But if they want to
7 make a modification to a plant, for example, the plant
8 I used to work at didn't have a motor-driven auxiliary
9 feedwater system. During the course of the evolution
10 of that plant, we put a motor-driven auxiliary
11 feedwater system in. So we had to establish the
12 criteria for that system.
13 So we looked at the penetration piping,
14 what class should that be; what class should the general
15 system be, etcetera.
16 MEMBER STETKAR: Even today people are
17 making, as a result of transition to NFPA-805, plants
18 have installed supplementary reactor coolant pump
19 sealed cooling systems, supplementary service water
20 systems and things like that as upgrades. So they
21 would have -- those are brand new things that they're
22 installing.
23 MEMBER RICCARDELLA: Okay, thank you.
24 MEMBER SKILLMAN: So would you like me to
25 ask if the public is out there?

CHAIRMAN BLEY: You need to ask.

MEMBER SKILLMAN: That's fine. Would you make sure a line is open please? Is there anybody in the room that would care to make a comment here please?

(No audible response.)

MEMBER SKILLMAN: Seeing none, we'll get the phone line open.

CHAIRMAN BLEY: Thank you.

MEMBER SKILLMAN: It's not a problem.

(Pause.)

MR. HOWARD: It's open but not -- nobody's there.

MEMBER SKILLMAN: Well let's ask. Good afternoon. This is the ACRS. If anybody is on the phone line, would you just please state your name?

(No audible response.)

MEMBER SKILLMAN: Hearing none, thank you. We'll close the phone line. Dennis, back to you sir.

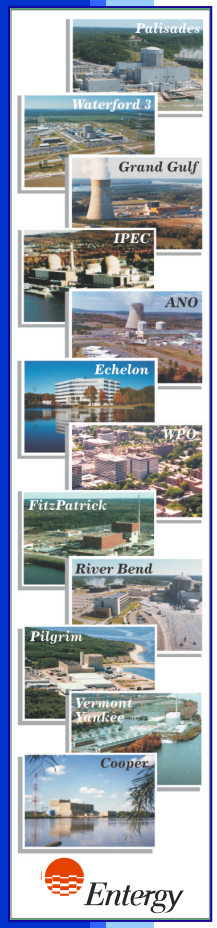
CHAIRMAN BLEY: Thank you. At this point we're going to go off the record for the week. But we have a couple of other items and let's stay around for just a minute.

(Whereupon, the above-entitled matter went off the record at 3:53 p.m.)

Grand Gulf Nuclear Station

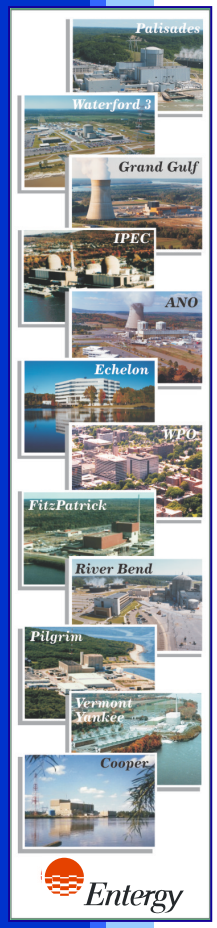
ACRS License Renewal
October 6, 2016

Panel Members



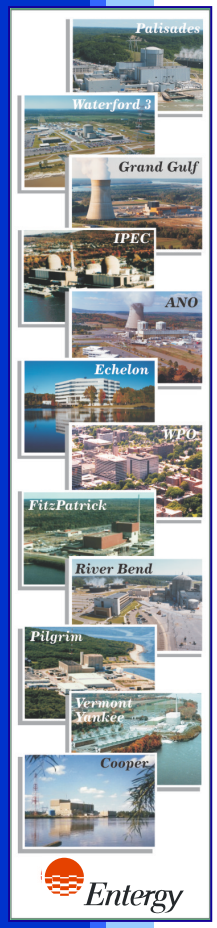
Thomas Coutu	Director, Regulatory Assurance and Performance Improvement
James Nadeau	Manager, Site Regulatory Assurance
James Hallenbeck	Manager, Design and Program Engineering
Garry Young	Director, License Renewal
David Lach	Fleet Project Manager, License Renewal
Andrew Taylor	Supervisor, License Renewal
Alan Cox	Senior Consultant

Agenda



- **Background**
  - **Site Description**
  - **Plant Status**
  - **Licensing History**
  - **Major Equipment Upgrades**
  - **License Renewal Project**
- **Presentation Topics**
  - **Closure of Previous Open Items**
  - **Follow-up from Subcommittee**

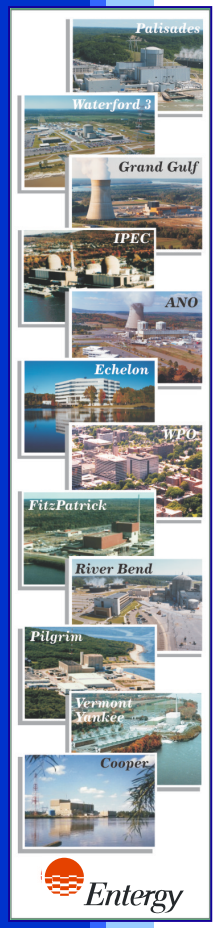
GGNS Site Description



- Located on Mississippi River Southwest of Vicksburg, MS
- General Electric (NSSS) - Bechtel (constructor)
- BWR-6, Mark III containment
- Siemens turbine generator
- Closed circulating water system with natural draft and mechanical draft cooling towers
- 15% EPU implemented in 2012
- Current licensed thermal power

  4408 MWt
- Staff complement: Approximately 600

GGNS Cycle Status



- Plant Status

  Forced Outage FO 21-04

  24-month fuel cycle

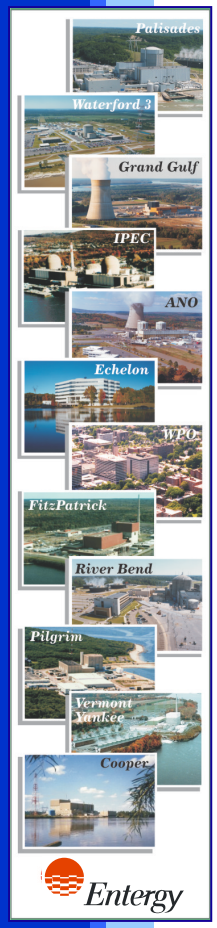
- Last Refueling Outage

  RF20 (Spring 2016)

- Next Refueling Outage

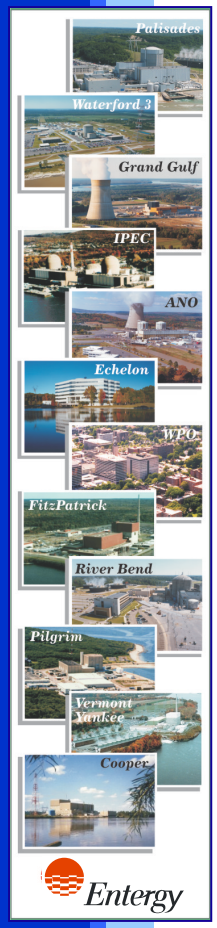
  RF21 (Spring 2018)

GGNS Licensing History



Construction Permit	September 4, 1974
Operating License	November 1, 1984
Commercial Operation	July 1, 1985
LR Application Submitted	November 1, 2011
EPU License Amendment	July 18, 2012
Operating License Expires	November 1, 2024

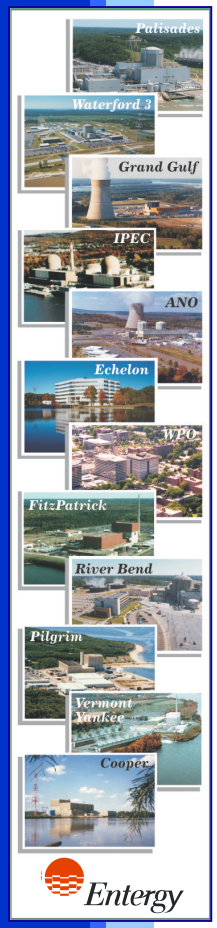
Major Equipment Upgraded



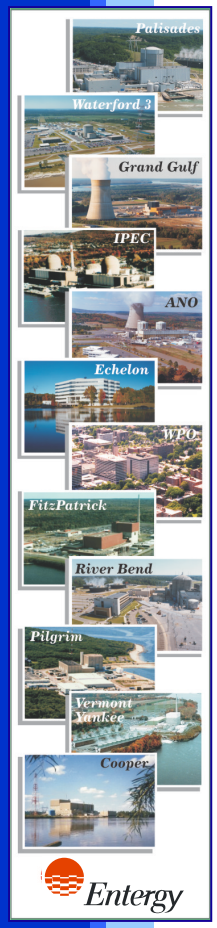
- Main transformers
- High pressure turbine rotor
- Main generator
- Generator hydrogen coolers
- Fuel pool cooling & cleanup heat exchanger
- Steam dryer
- Reactor feed pump turbine rotor
- Auxiliary cooling tower

High Pressure Turbine Rotor

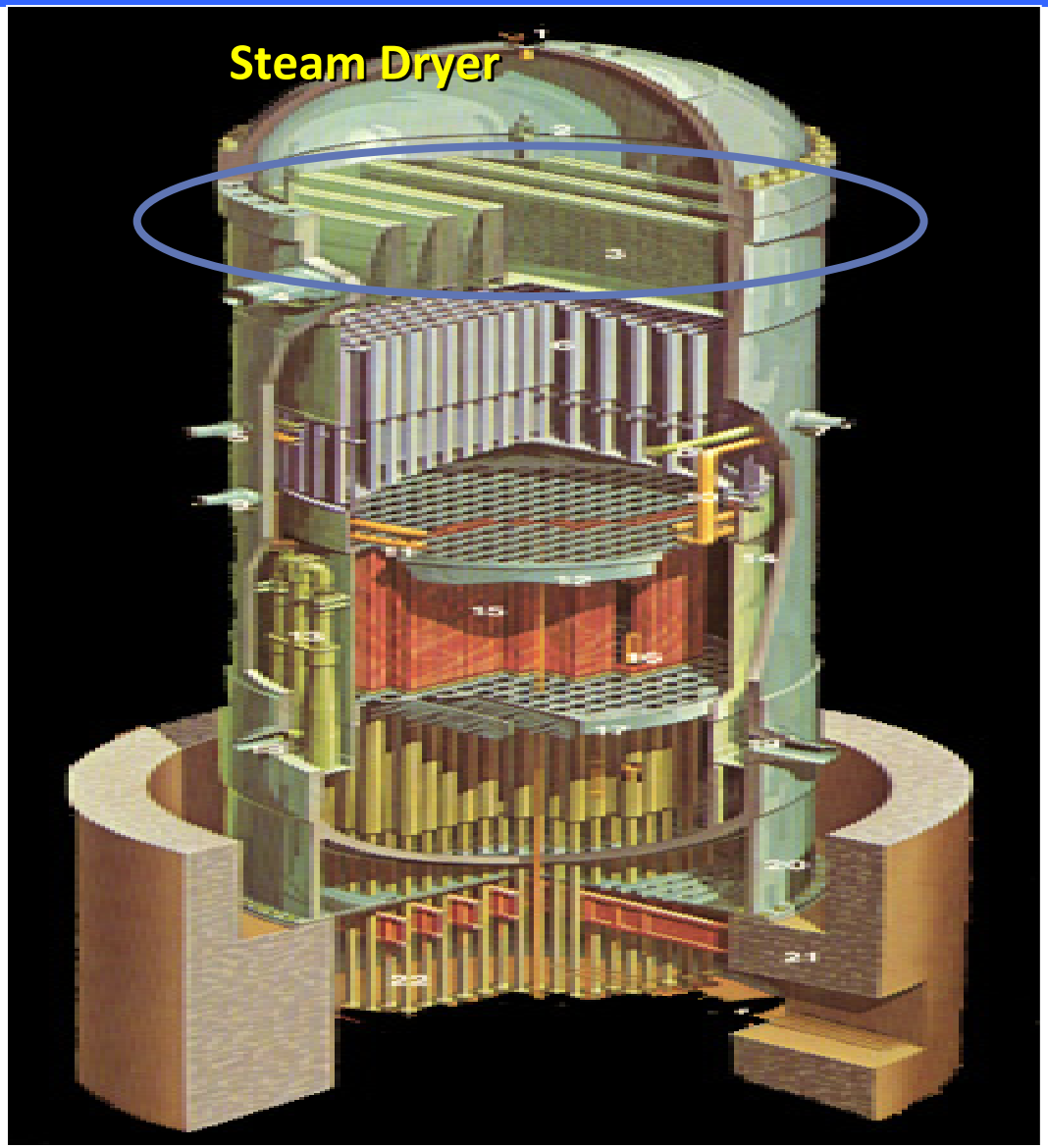
Auxiliary Cooling Tower



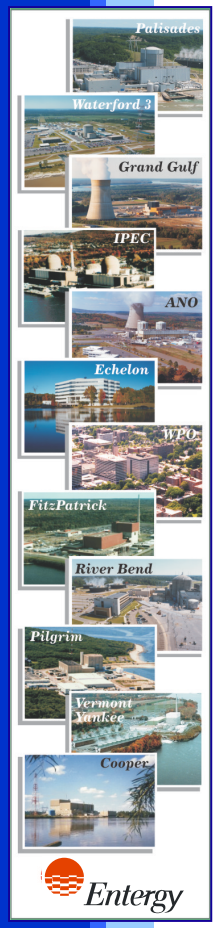
Main Generator



Steam Dryer

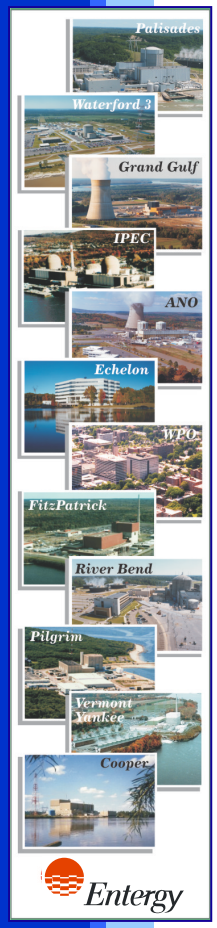


GGNS License Renewal Project



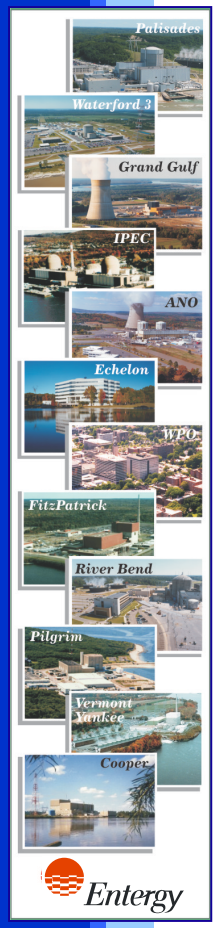
- Incorporated lessons learned from previous applications
- Application prepared by an experienced, multi-discipline Entergy team (using corporate and on-site resources)
- Used NEI 95-10 guidance
  - Scoping and screening process
  - License renewal application format and content
- Compared against Revision 2 of NUREG-1801
- Considered the impact of power uprate

Prior Open Items Now Closed



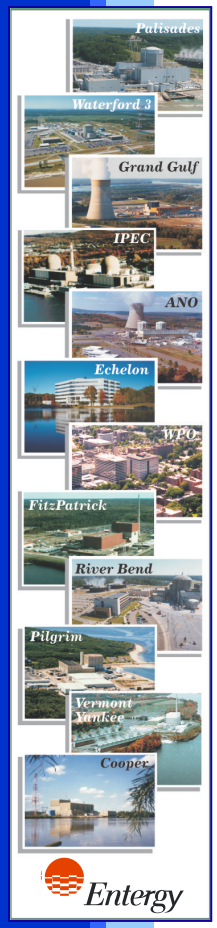
1. One-Time Inspection – Small-Bore Piping Program
2. Service Water Integrity (SWI)
3. Future Review of Operating Experience for Aging Management Programs
4. Neutron Fluence Calculation Method

FINAL SER



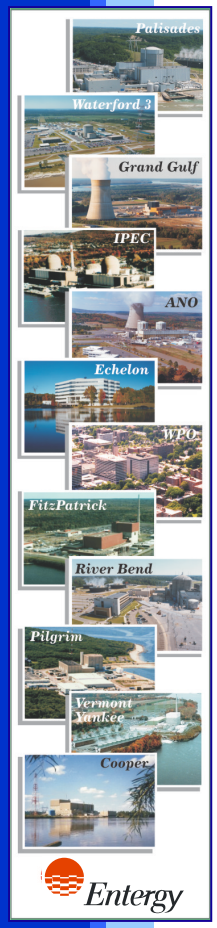
- SER issued September 2016
  - No open items
  - No confirmatory items

Aging Management Programs and Regulatory Commitments



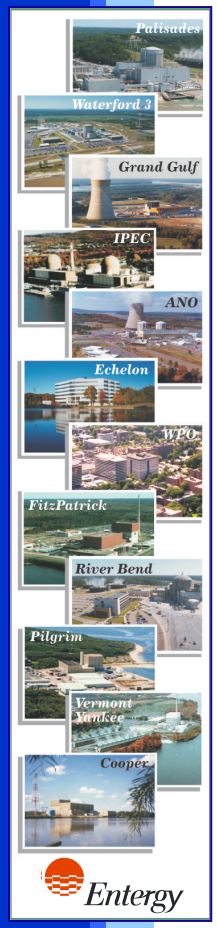
- **44 Aging Management Programs**
  - 10 new programs
- **License Renewal Commitments**
  - 35 regulatory commitments for new programs and program enhancements managed with the established GGNS regulatory commitment management system

Program/Commitment Implementation



- Commitments managed through the established CMS
- Entergy has significant experience with license renewal
- Similar new AMPs and AMP enhancements have been successfully implemented at other Entergy plants

Program/Commitment Implementation



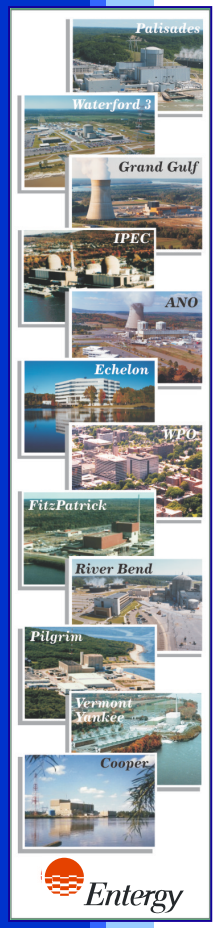
- Containment Leak Rate Program

  NUREG-1801 XI.S4 indicates the use of Rev. 2-A of NEI 94-01.

  Element 5 Exception: GGNS adopted NEI 94-01 Rev. 3-A subject to the conditions specified in the SER for the GGNS LLRT License Amendment Request

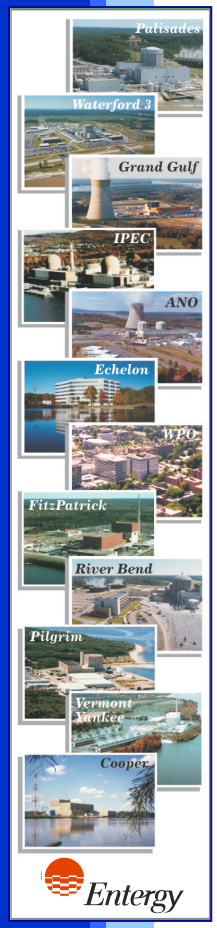
  Element 7 Exception: GGNS has received approval to apply the provisions for corrective actions of NEI 94-01 Rev. 3-A subject to the conditions specified in the SER for the GGNS LLRT License Amendment Request

Follow-Up from Sub-Committee



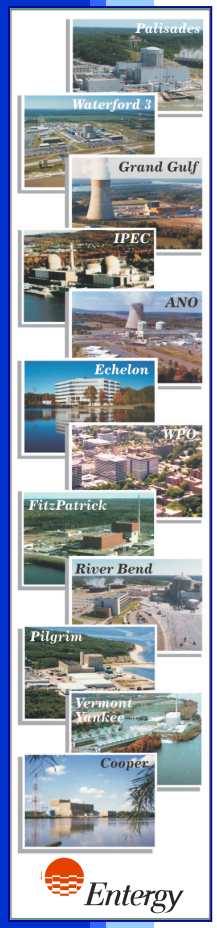
- Two manhole sump pumps failed resulting in water covering the cables.
  - The cables are tested on a 6-year interval
  - The installed cables are rated for wetting
  - Safety-related manholes are inspected monthly

Follow-Up from Subcommittee



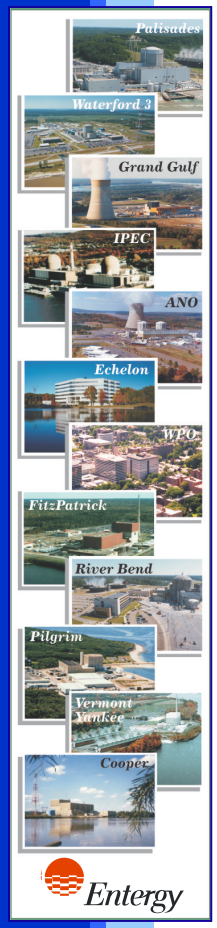
- Cathodic Protection Program Status
  - Question: “What’s your experience with the cathodic protection system availability in the last three, four, five years?”
  - Availability has been 100% for the past year

License Renewal Commitments



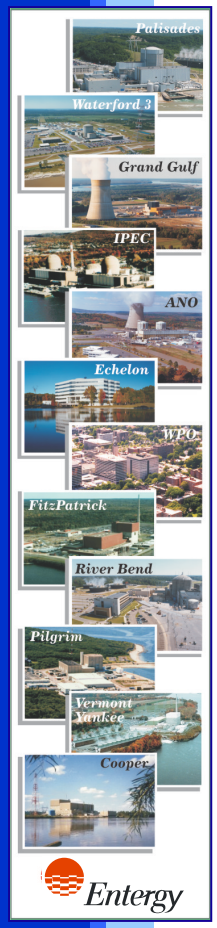
- All commitments are tracked in the station regulatory commitment management system
- Implementation of new programs and enhancement of existing programs is being managed through regulatory commitment management system

Conclusion



- Entergy will manage the effects of aging in accordance with 10 CFR 54.21(a)(1)
- Entergy has evaluated time-limited aging analyses that require evaluation under 10 CFR 54.21(c)
- Entergy is committed to the long-term safe operation of GGNS.

Comments and Questions



United States Nuclear Regulatory Commission

Protecting People and the Environment

Advisory Committee on Reactor Safeguards Full Committee Meeting

October 6, 2016

Grand Gulf Nuclear Station, Unit 1
Final Safety Evaluation Report (FSER)

Emmanuel Sayoc, Project Manager
Office of Nuclear Reactor Regulation

U.S.NRC
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Presentation Outline

- **Overview of Grand Gulf license renewal review**
- **Closure of Open Items**
- **Conclusion**

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Review Milestones

- License Renewal Application Received October 28, 2011
- Safety Evaluation Report (SER) with Open Items issued January 31, 2013
- Final SER issued April 4, 2016
- ACRS License Renewal Subcommittee meeting held May 5, 2016

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SER Overview

- Staff has completed its review in accordance with the SRP-LR and 10 CFR Part 54
- SER contained 4 OIs, now closed:
  - One-Time Inspection – Small-Bore Piping
  - Service Water Integrity
  - Operating Experience
  - Neutron Fluence
- Final SER Updated September 2016
- Updated SER sections on Containment Leak Rate Program evaluation

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SER Section 3

3.0.3 - Aging Management Programs

Applicant's Disposition of AMPs	Disposition of AMPs in Final SER
• 10 new programs – 9 consistent – 1 plant specific • 34 existing programs – 12 consistent – 19 consistent with enhancements – 1 consistent with exceptions – 1 consistent with enhancements and exceptions – 1 plant specific with enhancement	• 10 new programs – 9 consistent – 1 plant specific • 34 existing programs - 7 consistent - 20 consistent with enhancements - 3 consistent with exceptions - 3 consistent with enhancements and exceptions – 1 plant specific with enhancement

Containment Leak Rate Program (CLRP)

- Issue:
  - Implementation of February 2016 approved license amendment request on leak rate testing, is inconsistent with corresponding program elements in GALL Report AMP XI.S4.

- Applicant's LRA Amendment response:
  - CLRP implements Types A, B, and C, LRTs of 10 CFR Part 50 Appendix J in accordance with:
    - Criteria in RG 1.163, and NEI 94-01, Revision 3-A,
    - In part testing criteria of ANSI/ANS-56.8-2002.
  - Update LRA UFSAR supplement and CLRP description
  - CLRP consistent w/ exceptions (program elements 5, and 7)

- Staff Conclusion:
  - The staff found this amendment acceptable, staff's concerns are resolved.

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OI 3.0.3.1.33-1: One-Time Inspection – Small-Bore Piping Program

- Issue:
  - Initial plant operating experience (OE) review related to age related cracking was limited in scope.
  - RAI requested an entire plant history search relevant to the Small-Bore Piping Program

- Applicant's Response:
  - Performed a complete plant OE search
  - Reviewed all results of plant-specific OE

- Staff's Conclusion:
  - Program is consistent with the GALL Report; Open item is therefore closed

OI 3.0.3.1.39-1: Service Water Integrity (SWI)

- Issue:
  - Unclear how OE for erosion in the service water system was being managed
  - Inconsistent initial RAI responses
- Applicant's Responses:
  - Enhancements to SWI, Flow-Accelerated Corrosion and Periodic Surveillance and Preventive Maintenance programs
  - AMR items for erosion added
- Staff's Conclusion:
  - Loss of material due to erosion is being managed; open item is therefore closed

OI 3.0.5-1: OE for AMPs

- Issue:
  - Could not verify applicant's OE Program consistency
  - RAIs requesting age related OE Program details
- Applicant's Response:
  - CAP and training address aging effect degradation
  - Consider plant-specific/industry OE, NRC/industry guidance and standards, AMP implementation results
  - Evaluate AMP effectiveness, enhance or develop new AMPs
  - OE coded, trended, reported
- Staff's Conclusion:
  - OE Program is consistent with SRP LR Section A.4.2; open item therefore closed

OI 4.2.1-1: Neutron Fluence

- Issue:
  - GGNS' combined fluence calculation method lacks adequate technical basis, not consistent with RG 1.190
  - RAIs requested justification or use of an approved fluence method
- Applicant's Response:
  - Applicant received license amendment approval for single MPM fluence calculation method
  - Applicant updated RV neutron embrittlement TLAAs in LRA and UFSAR supplement
- Staff's Conclusion:
  - Approved fluence method incorporated into CLB, fluence projections identified as TLAA; Open item therefore closed

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Conclusion

On the basis of its review, the staff determines that the requirements of 10 CFR 54.29(a) have been met for the license renewal of Grand Gulf Nuclear Station, Unit 1

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Questions / Comments

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Regulatory Guide 1.26, Revision 5

"Quality Group Classifications and Standards for Water-, Steam-, and Radioactive-Waste-Containing Components of Nuclear Power Plants"

Timothy Lupold
Tuan Le
NRO/DEIA/Mechanical Engineering Branch (MEB)

October 2016

Presentation Summary

- During a meeting on August 16, 2016, the NRC staff briefed the ACRS Subcommittee on proposed Revision 5 to RG 1.26.
- During the meeting, the ACRS Subcommittee provided recommendations regarding the scope and application of RG 1.26.
- When initially developing proposed Revision 5 to RG 1.26 in 2013, the NRC staff determined that this effort would involve an administrative update to RG 1.26 with additional information provided in the Background section.
- Therefore, proposed Revision 5 to RG 1.26 includes the following changes:
  I. Clarification of the definition of Quality Group A
  II. Reference to the scope of the ASME OM Code
  III. References to other quality classification approaches (ANS)
  IV. Reference to a risk-informed alternative approach 10 CFR 50.69
- The NRC staff plans to address the ACRS Subcommittee recommendations as part of the next revision to RG 1.26 with input from internal and external stakeholders.

Applicable Rules and Regulations

- 10CFR 50, Appendix A, GDC 1, “Quality Standards and Records”
  - SSC designed, furbished, erected, and tested to quality standards commensurate with the importance to safety.
- 10 CFR 50.55a, “Codes and Standards”
  - Established criteria for piping systems
- 10 CFR 50.69, “Risk-informed categorization and treatment of structures, systems, and components [SSCs] for nuclear power reactors”
  - SSC categorization process using Probabilistic Risk Assessment (PRA)

Revision 5 to RG 1.26

- Revision 5 includes:

  1. Clarification of the definition of Quality Group A

  2. Reference to the scope of the ASME Code for Operation and Maintenance of Nuclear Power Plants (OM Code)

  3. References to other quality classification approaches (ANS).

  4. Reference to a risk-informed alternative approach that may be used for categorizing and treating SSCs (10 CFR 50.69).

- Revision 5 does not impose new technical requirements.

Applications of RG 1.26

- RG 1.26 is applicable to operating reactors and new reactor designs.
- Applicants and licensees may voluntarily use the guidance in RG 1.26 to demonstrate compliance with the underlying NRC regulations.
- Methods or solutions that differ from those described in this RG may be deemed acceptable if sufficient basis and information is provided for the NRC staff to verify that the proposed alternative demonstrates compliance with the appropriate NRC regulations.
- Applicants and licensees have assigned components within a system with different Quality Group classifications based on their specific functions.
- Current licensees may continue to use their current licensing basis. This may deviate from the guidance in RG 1.26.

I. Clarification of the definition of Quality Group

- 10 CFR 50.55a requires that components of the reactor coolant pressure boundary (Class 1) meet the requirements of the ASME BPV Code, Section III. This corresponds to the quality standards for Quality Group A of the NRC classification system.

- Proposed Revision 5 to RG 1.26 provides clarification of Quality Group A in the Staff Regulatory Guidance section.

II. Reference to the scope of the ASME OM Code

- The ASME OM Code is incorporated by reference in the NRC's requirements in 10 CFR 50.55a.
- The ASME OM Code as accepted by the NRC describes the inservice testing program for pumps, valves, and dynamic restraints at nuclear power plants.
- A user of RG 1.26 should confirm that its classification process considers the scope of pumps, valves, and dynamic restraints specified in ASME OM Code.

III. References to other quality classification approaches (ANS)

- American National Standards Institute (ANSI) and American Nuclear Society (ANS), ANSI/ANS-58.14-2011, “Safety and Pressure Integrity Classification Criteria for Light Water Reactors”

- 10 CFR 50.69, “Risk-informed categorization and treatment of structures, systems, and components for nuclear power reactors”

- IAEA Specific Safety Guide SSG-30, “Safety Classification of Structures, Systems and Components in Nuclear Power Plants”

IV. Reference to a risk-informed alternative approach that may be used for categorizing and treating SSCs (10 CFR 50.69)

- 10 CFR 50.69 provides a voluntary risk-informed process for categorizing and treating (e.g., inspecting and testing) SSCs that may be used as an alternative to the process of classification. NRC approval is required.

- This alternative approach is described in RG 1.201, “Guidelines for Categorizing Structures, Systems, and Components in Nuclear Power Plants According to their Safety Significance,” that accepts Nuclear Industry Institute NEI 00-04, “10 CFR 50.69 SSC Categorization Guideline,” with regulatory positions.

Related Guidance

- NUREG-0800, SRP Section 3.2.2 (Draft Revision 3 – August 2015), “System Quality Group Classification”
- NUREG-0800, SRP Section 17.5, “Quality Assurance Program Description – Design Certification, Early Site Permit, and New License Applicants”
- RG 1.143, “Design Guidance for Radioactive Waste Management Systems, Structures, and Components Installed in Light-Water-Cooled Nuclear Power Plants”

Summary

- RG 1.26 may be used to establish quality classification for SSCs in operating and new reactors.

- The NRC staff prepared proposed Revision 5 to RG 1.26 as an administrative update with (1) clarification of Quality Group A, (2) references to the scope of the ASME OM Code, (3) references to other quality classification approaches, and (4) references to a risk-informed alternative approach for categorizing and treating SSCs (10 CFR 50.69).

- Following issuance of Revision 5 to RG 1.26, the NRC staff plans to initiate the next revision to RG 1.26 to address the ACRS recommendations with input from internal and external stakeholders.