

Official Transcript of Proceedings
NUCLEAR REGULATORY COMMISSION

Title: Advisory Committee on Reactor Safeguards
 Reliability and PRA Subcommittee

Docket Number: (n/a)

Location: Rockville, Maryland

Date: Tuesday, March 3, 2009

Work Order No.: NRC-2700

Pages 1-144

NEAL R. GROSS AND CO., INC.
Court Reporters and Transcribers
1323 Rhode Island Avenue, N.W.
Washington, D.C. 20005
(202) 234-4433

1 UNITED STATES OF AMERICA

2 NUCLEAR REGULATORY COMMISSION

3 + + + + +

4 ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

5 + + + + +

6 SUBCOMMITTEE ON RELIABILITY AND PRA

7 + + + + +

8 MEETING

9 + + + + +

10 TUESDAY, MARCH 3, 2009

11 + + + + +

12 ROCKVILLE, MD

13 + + + + +

14 The Subcommittee convened in Room T2B3 in
15 the Headquarters of the Nuclear Regulatory
16 Commission, Two White Flint North, 11545 Rockville
17 Pike, Rockville, Maryland, at 1:00 a.m., Dr John
18 Stetkar, Chair, presiding.

19 SUBCOMMITTEE MEMBERS PRESENT:

20 JOHN STETKAR

21 J. SAM ARMIJO

22 DENNIS BLEY

23 WILLIAM SHACK

24 MARIO BONACA

25 HAROLD RAY

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24

NRC STAFF PRESENT:

HAROLD VANDER MOLEN, Designated Federal

Official

VALERIE BARNES

DAVID DESAULNIERS

AUTUMN SZABO

GREG BOWMAN

FRED BROWN

HOWARD BENOWITZ

ALSO PRESENT:

RUSSELL SMITH

MITCH TAGGART

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24

T-A-B-L-E O-F C-O-N-T-E-N-T-S

Introductory remarks.....4

Draft Final Regulatory Guide 5.73

 Valerie Barnes.....6

Industry Implementation of the Fatigue Management Rule

 Russell Smith.....90

PROS Concerning Definitions

 Mitch Taggart.....123

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

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

1:00 p.m.

1
2
3 CHAIR STETKAR: The meeting will now come
4 to order.

5 This is a meeting of the Advisory
6 Committee on Reactor Safeguards, Subcommittee on
7 Reliability and Risk Assessment.

8 I'm John Stetkar, Acting Chairman of the
9 Subcommittee.

10 Subcommittee members in attendance are,
11 let me look around the table here, Sam Armijo, Dennis
12 Bley, Bill Shack, Mario Bonaca and Harold Ray,

13 The purpose of this meeting is to discuss
14 draft Regulatory Guide 5.73 Fatigue Management for
15 Nuclear Plant Personnel, dated February 2009.

16 The Subcommittee will gather information,
17 analyze relevant issues and facts and formulate
18 proposed positions and actions as appropriate for
19 deliberation by the full Committee.

20 Harold VanderMollen is the designated
21 Federal Office for this meeting.

22 The rules for participation in today's
23 meeting have been announced as part of the notice of
24 this meeting previously published in the *Federal*
25 *Register* on February 13, 2009.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 A transcript of the meeting is being kept
2 and will be made available as stated in the *Federal*
3 *Register* notice.

4 It is requested that speakers first
5 identify themselves and speak with sufficient clarity
6 and volume so that they can be readily heard.

7 In addition to the staff presentation
8 we'll be hearing some oral statements from
9 representatives of outside organizations as noted in
10 the agenda.

11 Looking over the agenda and recognizing
12 some folks concern, we have a reasonably full agenda
13 for the afternoon. And I want to make sure that
14 everybody has ample opportunity to participate in the
15 discussion. With that goal in mind I understand that
16 there may be some concerns regarding specific elements
17 of the regulations as published in 10 CFR Part 26,
18 Subpart I. I wanted to remind everyone here, members
19 and any other participants, that the purpose of this
20 meeting is to discuss implementation of that guidance
21 as put forth in the Regulatory Guide. Therefore, to
22 make sure that we have enough time to really consider
23 the substantive issues in the Regulatory Guide I'd ask
24 everyone, if you can, to try to keep focused on that
25 topic. If I see the discussion straying too far into

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 issues that are really more part of the rule, I'm
2 going to try to keep us on track.

3 So with that, I'll turn the meeting over
4 to Valerie Barnes.

5 MS. BARNES: Thank you, John.

6 CHAIR STETKAR: And you can take it away.

7 MS. BARNES: I'm Valerie Barnes. I'm with
8 the Office of Nuclear Regulatory Research. We've had
9 responsibility for working with our stakeholders and
10 other offices to develop the Regulatory Guide. NRR,
11 Office of Nuclear Reactor Regulation, has had the
12 technical issues in the Regulatory Guide itself, which
13 is why I have some additional colleagues up here with
14 today.

15 Over the course of the rulemaking we've
16 had some reshuffling of staff and management that's
17 been involved in both the rulemaking and the
18 Regulatory Guide. And that includes Dr. Dave
19 Desaulniers, who with Jay Persinky before Jay retired
20 had primary responsibility for the scientific and
21 technical basis for the rulemaking. Howard Benowitz
22 from OGC also has some history with the rule and
23 certainly the interpretation of the requirements that
24 are in the rule as they are played out in the
25 regulatory guide.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 So I wanted to make it clear that I'm
2 going to be relying on Dave to a great extent when it
3 comes to -- you know, he's been trying to get away
4 from this -- when it comes to talking about the basis
5 for the rulemaking itself as opposed to the Regulatory
6 Guide.

7 So there were five topics overall that I
8 wanted to cover today during our discussion of the
9 Regulatory Guide. Briefly wanted to talk about why
10 the agency has gone ahead and done a fatigue
11 rulemaking.

12 Wanted to do a brief overview of what's in
13 Subpart I, which is the fatigue management program in
14 Part 26.

15 Talk about the history of the regulations
16 guide.

17 And then do a quick overview of the draft
18 final Regulatory Guide and discuss the two areas in
19 particular where we continue to have substantive
20 disagreements with our stakeholders.

21 Okay. For slide 3, I just wanted to point
22 out that prior to publishing this rule the NRC had a
23 policy statement on worker fatigue. It established
24 work hour limits for certain classes of personnel. It
25 was published in 1982.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 We went into rulemaking activity because
2 we had a petition from an SRO for rulemaking related
3 to work hour limits.

4 We had approval from the Commission and
5 initiated formal rulemaking activities beginning in
6 2002.

7 Held at least 16 or more public meetings
8 just on the rule requirement itself.

9 And ended up final rule last March, almost
10 11 months ago, March 31st. However, we gave the
11 industry an 18 month implementation period before they
12 had to comply with the fatigue management
13 requirements. The licensees have to implement the
14 fatigue management provisions no later than October
15 1st of this year. And so we have been doing our very
16 best to get the implementation guidance published.
17 We're planning on having it out by the end of May,
18 which will still leave only four months before the
19 fatigue management provisions go into effect. However,
20 as we've gone along and held our public meetings we've
21 also published our draft final, our drafts you know
22 and NEI's proposals in their document, NEI 06-11 all
23 along the way so that although the guidance document
24 may not be published under the end of May, 99 percent
25 of the means for implementing the rule will have been

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 out there for quite some time.

2 CHAIR STETKAR: Well, I notice that NEI
3 has requested a 6 month extension? Are you going to
4 talk a little bit about that? Our concern here,
5 obviously, is not particularly programmatic type
6 things. But I was just curious whether you've come to
7 any conclusions. And if you're going to talk about
8 that later, that's fine.

9 MS. BARNES: I didn't have it scheduled. I
10 didn't know if it was something that you wanted to
11 address. Do you want to seal with it now or talk
12 about it later?

13 CHAIR STETKAR: Sure. If it's quick.

14 MS. BARNES: Greg?

15 CHAIR STETKAR: Have you reached any
16 determination?

17 MS. BARNES: Yes.

18 MR. BOWMAN: My name is Greg Bowman. I'm
19 in the Office of Enforcement.

20 NEI provided a request for six months of
21 discretion, as you mentioned, in two letters in
22 October and December of 2008. We carefully reviewed
23 the basis for their request for discretion and we
24 didn't find inadequate technical justification for
25 granting that extension.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 We did consider and we're obviously open
2 to considering discretion based on further input. But
3 right now we feel like the best approach is granting
4 exemptions on a case-by-case basis.

5 CHAIR STETKAR: Thank you.

6 MS. BARNES: Which is an issue related to
7 the school itself whether than the Regulatory Guide,
8 so we didn't want to go into a lot of detail on that
9 one. But thanks for asking about it.

10 CHAIR STETKAR: I only brought it up
11 because in the Regulatory Guide where it talks about
12 input from the public --

13 MS. BARNES: Right.

14 CHAIR STETKAR: -- the last line item I
15 read said the staff was still considering that
16 requests.

17 MS. BARNES: Thanks. Right.

18 CHAIR STETKAR: Thanks.

19 MS. BARNES: Perhaps we'll change that in
20 the Regulatory Guide.

21 CHAIR STETKAR: It might be good.

22 MS. BARNES: That's right.

23 Okay. Back to 2002. Following the
24 petition for rulemaking the staff went out and took a
25 look at what industry practices were related to

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 managing fatigue and managing work hours of nuclear
2 power plant personnel and determined that certainly
3 there's working conditions that are very prevalent in
4 the industry that contribute to the likelihood that
5 people will become fatigued. We already knew based on
6 the scientific and research literature that fatigue
7 affects workers' fitness for duty and job performance.

8 And when the staff took a look at some of the
9 practices that were in place out in the industry where
10 we had people working, for example, during outages
11 seven days straight, 12 hour days for many days in a
12 row, some licensee, the Commission came to the
13 conclusion that it would be beneficial among other
14 reasons to actually go ahead and do a rulemaking to
15 address some of these issues.

16 Some characteristics of work in nuclear
17 power plant that set the stage for workers to develop
18 fatigue includes scheduling factors. Obviously, it's a
19 24/7 operation. So we have people on rotating shifts.
20 We've got long workdays. We have people that are
21 having to deal with very early start times, which is
22 another contributor to fatigue. We have staffing
23 factors in nuclear power plants. In particular we've
24 got an aging workforce. It's starting to change, but
25 currently the majority of the workforce in our plants

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 are older. And in addition, we've got a highly
2 variable workload which also can contribute to fatigue
3 when the need to ramp up occurs.

4 And then we've got among the tasks that
5 are safety-significant and that, you know, as
6 regulators we really care about, we've got some task
7 characteristics that make fatigue a particular issue
8 including the need to maintain high vigilance which
9 the ability to do that suffers from fatigue. We've got
10 low physical activity which makes people more
11 vulnerable to the effects of fatigue. The work that
12 our licensee personnel do require is very high
13 attention to detail and involves cognitive demands.
14 And so the kinds of tasks that are performed by some
15 classes of personnel at our plants are very vulnerable
16 to the effects of fatigues.

17 Next slide.

18 Okay. I'm not going to spend much time on
19 this. This is an example of the kinds of incidents
20 that issues that the NRC was seeing during the period
21 that we were engaged in the rulemaking. We had
22 incidents of operators found being inattentive,
23 security officers being inattentive, you know folks
24 working very long hours that were inconsistent with
25 commitments that licensees had made in their technical

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 specifications to the Generic Letter 82-12, and so on.
2 So I don't want to dwell on these, I just wanted to
3 mention that these kinds of incidents continued on
4 even while we were doing the rulemaking.

5 MEMBER ARMIJO: Just a quick
6 clarification. These incidents where people were
7 sleeping, was there some analysis that said yes, they
8 were sleeping because we looked at the records and it
9 showed they'd been working 60 hours a week or
10 something like that or was it just because they're
11 sleeping it's a worker fatigue problem as opposed to a
12 worker --

13 MS. BARNES: Are you to make that a
14 before, right.

15 MEMBER ARMIJO: Yes. No. Is it overwork
16 or just is there some analysis that goes into this
17 thing that says it's really worker fatigue and it's
18 something we can manage or the facility can actually
19 manage?

20 MR. DESAULNIERS: I believe in the
21 instances you have here, the work hours were not
22 cited as a specific contributing factor. However, as
23 Val will go on to explain, this rulemaking is really
24 fatigue management rulemaking it's not just work hour
25 controls. And so we're looking at what causes people

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 to become inattentive for reasons beyond just work
2 hours.

3 MS. BARNES: It's a broad brush.

4 I know one of the issues as well when the
5 question comes up about have we ever had any incidents
6 in the industry that we were sure were caused by
7 fatigue, that one of the challenges that we have is
8 that in our industry we haven't developed, or at least
9 to the extent that I'm familiar with, implemented good
10 practices with respect to identifying whether fatigue
11 contributed to an event or not. The NTSB has an
12 investigation protocol that they apply their human
13 factors staff who are trained to apply. Coast Guard
14 took it a step further and developed guidance for
15 investigating the contribution of fatigue to events
16 that is directed at your average Coast Guard guy on
17 the ship. You know, does it require a human factors
18 background.

19 But as far as I'm aware none of those more
20 sophisticated techniques have been used in our
21 industry. So whether fatigue has actually contributed
22 to an event or not, I'm not.

23 MEMBER BLEY: Is there any plan to include
24 people with background to do that? When we have quick
25 response to an incident in the plant, we send out a

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 team?

2 MS. BARNES: We have no plan to do that at
3 the moment.

4 MEMBER BLEY: It's not even been
5 discussed?

6 MS. BARNES: Well, we have incident
7 investigation teams and AITs and those kinds of
8 things.

9 MEMBER BLEY: There's no effort to really
10 have them look at the fatigue incident on it?

11 MS. BARNES: It would be a great
12 recommendation from ACRS.

13 MR. DESAULNIERS: Well, the expectation is
14 -- well and part of the rulemaking is that training
15 will be provided for the licensees by the licensees to
16 understand the contributors to fatigue, the effects of
17 fatigue. And so there should be as a result of the
18 increased emphasis and looking at the factors that
19 contribute to fatigue.

20 There are specific requirements in the
21 rule for post-event fatigue assessments. And so some
22 of the contributors that may not have been previously
23 identified would be identified by the licensee under
24 the rule requirements.

25 MR. BROWN: This is Fred Brown in NRR.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 If I could also add, not in the guidance
2 document for the rule but in the inspection procedures
3 that we're issuing following implementation of the
4 rule we do plan to add a diagnostic on fatigue to our
5 supplemental inspections and reactive inspections
6 which I think gets to the point that you were raising.
7 We will be looking for fatigue.

8 MEMBER BLEY: Is that drafted already?

9 MR. BROWN: They're in process of drafting
10 it. A May/June time frame, I think, is when we're
11 looking at.

12 MEMBER BLEY: Probably at least be
13 interesting reading.

14 MS. BARNES: In addition to which,
15 Research is supporting NRR and NSIR in developing the
16 training for our inspectors. And so we'll be covering
17 some of these issues as well in the training that
18 we'll be providing.

19 Okay. As we discussed previously before,
20 another reason for the rulemaking was that we knew
21 that fatigue based on the science literature
22 contributes to performance decrements. And in these
23 particular areas, as you'll note, these are the kinds
24 of capabilities that people need to be able to respond
25 certainly to transients. And when it comes to

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 security personnel who are armed, also in making the
2 decision as to whether or not to use deadly force,
3 which is a concern.

4 Okay. Some of the other reasons with
5 regard to the policy statement and licensee
6 incorporating the work hour limits that were in the
7 policy statement into their tech specs, some of the
8 limitations from that previous regulatory approach
9 included, we had some undefined terms and language in
10 the policy statement. We had the use of waivers from
11 the work hour limits not circumstances. We didn't
12 address cumulative fatigue in the policy statement,
13 and I'm going to talk more about that particular term
14 later. And as Dave mentioned a moment ago, the policy
15 statement was really only focused on minimizing the
16 potential for fatigue from work hours, whereas the
17 rule takes a broad brush approach that not only limits
18 work hours but also educates personnel about fatigue
19 and fatigue self management and so on, which actually
20 has shown to be effective in the research literature
21 when people know about it and know about the need for
22 sleep, they actually make sure that they sleep more.

23 Yes?

24 CHAIR STETKAR: Since the first bullet up
25 there says undefined terms and one of the questions I

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 had, this gets to the rule again so I want to keep
2 violating my own law. But that's why I'm sitting
3 here. Yes, it is. It's sad.

4 MEMBER BLEY: It's intoxicating.

5 CHAIR STETKAR: The definition of an
6 outage, since we'll eventually get to more substantive
7 issues related to outage work, I noticed that the
8 rule and the Regulatory Guide and the NEI documents
9 define for the purposes of fatigue management an
10 outage based on generating electricity into the grid.

11 MS. BARNES: Being connected to the grid.

12 CHAIR STETKAR: Yes, being connected to
13 the grid. As opposed to the status of the reactor,
14 which seems to be the more functional definition of
15 requirements in 10 CFR 50.54, for example. And I was
16 curious why an outage is defined that way for the
17 purposes of fatigue management? So in effect I enter
18 an outage when I stop generating electricity. The
19 reason can still remain critical, I could be at low
20 power level, I could be at hot shutdown and yet I'm in
21 an outage for the purposes of managing personnel work
22 hours.

23 Was there a conscious effort on the part
24 of the folks who crafted the rule to make that
25 distinction?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. DESAULNIERS: You're going back quite
2 a ways pressing my recollection on when we put forward
3 the words with respect outage. We were looking for
4 something that was clear applicable across various
5 plant designs. And for purposes for clarity as a
6 minimum we selected that as a definition.

7 And I don't recall that there was a
8 substantial discussion of well, no, we should tie this
9 to some mode or, you know, some other means of
10 defining the outage.

11 CHAIR STETKAR: I was just curious.
12 Because this rule in the Regulatory Guide will be
13 applied for new plant designs also. And many of those
14 plants are designed specifically with the ability to
15 keep the reactor operating at low power levels for
16 extended periods of time yet not generating
17 electricity into the grid; either generating power for
18 their own use or staying at low power. So that one
19 can get into a situation where you satisfy the
20 definition of an outage for perhaps a few days with
21 the reactor still operating at some measurable power
22 level.

23 Whether people will do this in practice is
24 something else. I'm actually familiar with some
25 plants in Europe that have done that. And I was just

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 curious it's so -- just take it as a comment. It's
2 curious. As again, we can't change it because it's
3 actually defined in the rule. I went back and I looked
4 at the rule. And in 10 CFR 26 wherever the
5 definitions are it is actually defined consistently
6 that way as far as connected to the grid.

7 MR. DESAULNIERS: And I believe, too, part
8 of the underlying consideration when I think back was
9 that under the outage condition you have less
10 stringent work hour controls. And that was a
11 condition that from a fatigue management perspective
12 we did not want to see go on for an unlimited period
13 of time. And so part of defining the outage was to
14 try to have bounds on the 60 day maximum period. And
15 it was generally expected that it would not be
16 advantageous for a utility to remain disconnected from
17 the grid simply for the purpose of being able to work
18 longer hours. So there was some economic incentive to
19 not extend the outage just for the purpose of working
20 longer work hours as part of, perhaps, the simplistic
21 consideration.

22 CHAIR STETKAR: Thanks.

23 MEMBER BLEY: Val, you've got the tech
24 specs up. When it comes to actually implementing this
25 by the time it needs to be implemented, does that mean

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 all the tech specs have to be brought up to date
2 consistent with this or are there other options
3 available, too?

4 MR. BENOWITZ: I believe the staff has
5 already made public templates that licensees can use
6 to submit license amendments to the Commission in
7 which the tech specs would be revised so that Subpart
8 I would be the controlling regulation.

9 MEMBER BLEY: So the rule would go under
10 the tech specs, is what you're saying?

11 MR. BENOWITZ: I don't remember.

12 MR. SMITH: Actually, the change in tech
13 specs takes the work hour rule out of tech specs now
14 that it's a rule and now that generic letter guidance.

15 We found out about two-thirds of our
16 licensee had that specifically in their tech specs.
17 The staff did give us a template for that. So we're
18 in the process of changing that. So it should be
19 removed from all licensee's tech specs.

20 MS. BARNES: So, based on the foregoing
21 considerations we ended up developing a rule to
22 attempt to meet the goal. Primarily we were looking to
23 strengthen the requirements that we had in place
24 regarding management of fatigue and have clear and
25 enforceable requirements in a rule.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 Now I'm going to try to briefly go over
2 what the rule requirements and I'm going to focus on
3 the portions of the rule that are relevant to the two
4 areas of substantive disagreement remaining in the
5 draft final Regulatory Guide.

6 First off, Subpart I. The fatigue
7 management program applies only to plants that are in
8 the operational phase. So it doesn't apply during
9 construction, generally.

10 And there two portions to the fatigue
11 management program. There's a set of requirements
12 that apply to any individuals who have unescorted
13 access to protected areas in nuclear plants. And then
14 there's a set of more stringent requirements, work
15 hour controls that apply to individuals to certain
16 categories. The covered workers.

17 The general fatigue management program
18 that applies to everyone that has unescorted access
19 establishes self-declaration procedures so that if an
20 individual believes that he or she is not fit to
21 safely and competently perform duties because of
22 fatigue, there's a process established for what
23 licensees do to respond to a self-declaration. It's a
24 formal self-declaration.

25 We have procedures for requiring licensees

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 to do fatigue assessments after some self-declares and
2 under certain other conditions related to fatigue.

3 We have requirements for training folks
4 who have unescorted access in symptoms of fatigue, the
5 impact of sleep disorders on performance and a variety
6 of issues related to self management of fatigue. And
7 then, of course, record keeping, reporting and audits.

8 Now those same requirements also apply to
9 the covered workers, of course. But there's these
10 additional work hour controls that apply to the
11 covered workers which include: Procedures for
12 scheduling work; work hour limits. We've established
13 minimum break requirements as well as average minimum
14 number of days off. We've established requirements for
15 waivers from the work hour controls. And special
16 self-declaration procedures that the licensee has to
17 implement if an individual self-declares that they're
18 too tired to work safely during the period when
19 they're working under a waiver.

20 Did you want a spin on that?

21 MR. DESAULNIERS: Well, I guess not,
22 unless there's any particular questions.

23 MS. BARNES: Okay. With respect to who
24 the covered the workers are among the subset of people
25 that are covered by the work hour controls. It's

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 maintenance and operations personnel who are
2 performing work activities that have shown to be risk
3 significant through our risk process or our risk
4 assessment process. So it wouldn't be necessarily
5 every maintenance or operations personnel on site.

6 We've got the chemistry and health physics
7 individuals who are assigned to the emergency response
8 organization that have to be subject to the work hour
9 controls.

10 We've got the individual on the fire
11 brigade for each shift who is responsible for
12 understanding the impact on safe shutdown capabilities
13 of fire suppressants and other fire response
14 activities.

15 And then we've essentially armed security
16 personnel. It doesn't include administrative security
17 workers, for example.

18 In addition to which, you want to hit the
19 next thing? Thanks. These are legacy slide from
20 Dave.

21 This is the one slide where we have
22 anything like that. Thanks, Dave.

23 And in addition to those persons and
24 categories of individuals we've got first line
25 supervisors who are on site, typically at the job site

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 directing those risk significant, maintenance and
2 operations activities. So it wouldn't be somebody at
3 corporate headquarters. It would be actually the
4 person on site that is overseeing these risk
5 significant work activities.

6 MEMBER ARMIJO: Do these rules cover
7 contractors on site?

8 MS. BARNES: Yes. IF they're performing
9 these activities, then they're subject to the work
10 hour controls and if they have unescorted access.

11 CHAIR STETKAR: Val?

12 MS. BARNES: Yes.

13 CHAIR STETKAR: Only because a couple of
14 questions came up in some discussions we were having.

15 The concept of directing risk significant
16 maintenance and operations, I read through NEI 06-11
17 and the Regulatory Guide, there seems to be a bit of
18 latitude for interpretation of what directing means.
19 Examples are technical support personnel, engineering
20 personnel for example, reactor physics personnel who
21 might be -- I have to be careful with my use of
22 terminology -- providing guidance to operations or
23 maintenance personnel for specific activities.

24 As I understand it, those engineering and
25 support personnel are not generally considered to be

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 directing those activities, is that correct? So
2 therefore they would not be subject to the same
3 controls for their work hours. Is that correct?

4 MS. BARNES: Yes. This is a really good
5 issue, and I'm going to have Dave respond it because
6 we spent years on this one.

7 MR. DESAULNIERS: I guess I should start
8 by saying that the term "directing" isn't a defined
9 term. So if that hadn't come to your attention.

10 And one of the key pieces of that
11 definition is that there's no subsequent technical
12 review to try to distinguish between a case where
13 someone is providing some guidance, but then there is
14 the capability to subsequently verify the
15 appropriateness of that guidance. Then it's just
16 that: It's advice, it's not directing.

17 CHAIR STETKAR: I guess I read the
18 definition. And having been a shift supervisor for a
19 few years, many years ago. I have to put that into
20 context. I recall many instances where we had
21 technical staff shift, you know engineer, cognizant
22 engineers working with our operators making direct
23 recommendations about things that should be done.
24 When you technical responsibility, and that in fact is
25 the term that's used in the definition, without

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 subsequent technical reviews is the presumption that
2 any licensed operator has sufficient has technical
3 qualifications to provide that ultimate technical
4 review and oversight? I guess that's the question.
5 Because one of the examples --

6 MR. DESAULNIERS: It's their
7 responsibility to question if they do not --

8 CHAIR STETKAR: They certainly have the
9 responsibility. But the definition talks about
10 technical review. Technical review, not legal
11 responsibility.

12 MS. BARNES: Well, there's two portions to
13 the definition. And there is an additional phrase in
14 there that talks about or is ultimately responsible
15 for the correct performance of that work activity.

16 CHAIR STETKAR: That's performance. So
17 the functional definition when I think about directing
18 really does fall back to that ultimate responsibility?

19 MS. BARNES: Which is the licensed
20 operators. Yes.

21 CHAIR STETKAR: Thanks. I just wanted
22 some clarification on that because, as I said, it had
23 come up and I know that it's also come up in some of
24 the other discussions. So I wanted to make sure I was
25 straight on that. Thanks.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. DESAULNIERS: Okay.

2 MS. BARNES: Ready to move on? Okay.

3 Work hour limits and break requirements.
4 This next slide is comparing what we've ended up
5 within the rule in terms of work hour limits and break
6 requirements versus what we had in the NRC policy
7 statement 82.12. Okay.

8 So compared to what we had in the policy
9 statement there's no change with regard to the number
10 of hours individuals can work in any 24-hour period,
11 maximum, or the limits on how many hours they can work
12 in a 7-day period. These are rolling periods, so it's
13 any 7-day period.

14 We did based on all kinds of discussion
15 and stakeholder input, increased the maximum work
16 hours in a 48-hour period from 24 to 26. And the
17 reason for that was because we have people on 12-hour
18 shifts and it was just inconvenient to try to limit
19 work hours on people on 12-hour shifts to only 24 and
20 48.

21 In addition to which, and this was a very
22 positive change in the staff's view anyway, we
23 increased the minimum break period between work shifts
24 from 8 to 10 hours to try to ensure that people had a
25 little bit opportunity for restorative sleep between

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 work shifts.

2 MEMBER ARMIJO: So in a 24-hour period you
3 could work 8-hours on, 8 hours break and another 8-
4 hours on, is that right or could you work 16 hours
5 straight and then take your 8 hours?

6 MR. DESAULNIERS: You need a minimum of a
7 10 hour break, so you couldn't work 8 on and 8 off
8 and then 8 on. You'd need 10 hours in between rather
9 than the minimum eight.

10 CHAIR STETKAR: Oh, I misread that. Okay.

11 MR. DESAULNIERS: But you could work 16
12 works straight.

13 MEMBER BLEY: You can work 16 hours as
14 long as you get 10 hours off.

15 CHAIR STETKAR: You can come in at 8:00--

16 MEMBER BLEY: But you can double shift?

17 MR. DESAULNIERS: You can double shift.

18 CHAIR STETKAR: You can double?

19 MR. DESAULNIERS: It's just not
20 practicable to do on a routine basis given the 10-hour
21 break requirement. But in extreme circumstances it's
22 available.

23 You could go through a day --

24 CHAIR STETKAR: You'll find when we get
25 into the Regulatory Guide it's really difficult to get

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 through some of these things conceptually without
2 working out your little timelines.

3 MS. BARNES: Right. Right.

4 CHAIR STETKAR: Always got to do some
5 staffing type things, which I'm sure --

6 MR. DESAULNIERS: I'm afraid everybody
7 agrees for it, but probably shouldn't.

8 MEMBER BLEY: We don't need to know this.

9 MS. BARNES: Yes. It's sort of a Rubik's
10 Cube.

11 MEMBER BLEY: You mentioned something
12 right in the beginning, Val, that I hadn't thought
13 about. With an aging work force when the rule is put
14 on, was that part of the thinking that was in it that
15 these cover the whole range of the work force
16 including those who are getting old?

17 MS. BARNES: (No audible response).

18 MEMBER BLEY: Okay. So it's kind for the
19 most restrictive person in the work force this is
20 okay.

21 MS. BARNES: No. It's more -- this is
22 more across the range of the work force. This
23 wouldn't be focused on what would be most beneficial
24 in terms of preventing fatigue for the aging work
25 force. This is more of a mean.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MEMBER BLEY: But it will be applied to
2 everybody?

3 MS. BARNES: Yes. Right.

4 But also remember that people are able to
5 self-declare.

6 MEMBER BLEY: Not very often, I suspect.

7 MS. BARNES: Yes. Well, it's been
8 interesting to see how this has been playing out.
9 Because security personnel have had the option to
10 self-declare under the security order for quite some
11 time now. So there continue to be some issues in a few
12 places, but they do.

13 MEMBER BLEY: If there is time, I would be
14 interested in the history of that you can tell us
15 about.

16 MS. BARNES: Okay. Not --

17 MEMBER BLEY: Not now.

18 MS. BARNES: Okay. Now the biggest change
19 and or one of the most important changes from what we
20 had under the previous policy statement is that we've
21 added requirements for personnel to have minimum days
22 off in order to ensure that they have an opportunity
23 to recover from cumulative fatigue. And our previous
24 work hour limits did an okay job under the policy
25 statement at preventing serious acute fatigue,

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 although it was permitted in some circumstances. But
2 they really didn't provide anything that addressed the
3 long term accumulation of fatigue that occurs over
4 several days or long periods in a row of even minimal
5 sleep restriction.

6 The research literature about cumulative
7 fatigue, this is laboratory work so far being funded
8 by NASA and some others, that as little as a
9 restriction of one or two hours a night of sleep over
10 4 or 5 days people that sleep 7-hours a day instead of
11 the eight that they're normally used to sleeping,
12 will start showing performance decrements on a variety
13 of different kinds of tasks. And when you let them go
14 so that they can sleep as much as they want to again,
15 it takes two or three days after the restricted sleep
16 period for their performance levels to get back where
17 they were.

18 So, I mean, you may have personally
19 experienced or not, but some people will accumulate
20 cumulative fatigue even on a 40-hour work week where
21 they're driving two hours a day, you know one hour
22 back and forth, doing family activities and not
23 getting to bed until 11:00 at night instead of 10:00,
24 for example.

25 So cumulative fatigue is insidious.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 Something that we hadn't dealt with before. And we
2 and our stakeholders considered a fairly large variety
3 of different ways of trying to counteract the impact
4 of cumulative fatigue. And in the end we came up with
5 the minimum day off requirements, which actually NEI
6 suggested.

7 And the MDO requirements, as we call them,
8 the minimal day off requirements are the only portion
9 of the rule that address and provide the opportunity
10 to recover from cumulative fatigue.

11 And so we have a set of complex
12 requirements associated with the minimum days off that
13 are also addressed in more detail in the Regulatory
14 Guide, the more draft final Regulatory Guide. But the
15 purpose of having so much complexity in the MDO
16 requirements is because we worked with our
17 stakeholders to develop requirements that are as
18 flexible as possible because there are so many
19 different circumstances that people in the different
20 jobs that in our power plants have to content with.
21 And we really wanted to achieve our rulemaking goals
22 of having programs to manage fatigue without putting
23 our licensees into a straight jack.

24 So, the minimum day off requirements
25 depend on whether the plant's in an operating state or

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 in an outage.

2 The applicable minimum days off
3 requirements depend on whether the person is working
4 an average, 8, 10 or 12-hour shift.

5 And the minimum days off requirements that
6 apply also depend on what kind of work the individual
7 is doing, whether they're doing those risk
8 significance maintenance activities, risk significant
9 operations or they're those ERO single cast of
10 characters, or doing security.

11 MEMBER BLEY: Let me ask you a question.

12 MS. BARNES: Yes.

13 MEMBER BLEY: I've seen something in
14 another industry where they had rules similar to
15 these, but then they were interpreted as being for the
16 people who have the same kind of jobs that we have
17 here, things related to the operation of the plant,
18 but the way it got interpreted some was, well, it
19 applies to those people when they're doing that role.
20 So once they finish that role they could put them in a
21 different role that wouldn't come under it and all of
22 a sudden being completely violating the spirit of
23 this. Is that protected through this process?

24 MS. BARNES: We do. We have procedures
25 established in the rule and also in the Regulatory

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 Guide. You know, they're more discussed in how they
2 implement them in more detailed in the Regulatory
3 Guide. That if an individual stops performing covered
4 work during a shift cycle, which is defined as
5 anywhere up to six weeks, you know the scheduling that
6 the licensee does to plan for who is going to be on
7 and off and when and so on and so forth over a six
8 week period.

9 For example, the operators if they take a
10 week off and go to training, the training is not
11 covered duties. It's not subject to this. But if
12 anyone stops performing covered work, does something
13 else and then comes back within the shift cycle to
14 performing covered work the house during the
15 noncovered duties count.

16 MEMBER BLEY: They count?

17 MS. BARNES: It's a really long way to say
18 that. I'm sorry.

19 MEMBER BLEY: Okay. But it's in there
20 someplace?

21 MS. BARNES: Yes, it is. Yes. They do
22 count. So those training weeks would count --

23 MEMBER BLEY: But you could put this thing
24 right up from the end of one cycle to begin with the
25 next, you could probably --

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. DESAULNIERS: Well, and I was going to
2 just make a minor clarification to what you said, Val.
3 If you limit to within the shift cycle, and it's not
4 limited to looking at it within the shift cycle.

5 An individual returning to duty, the look
6 back requirement is there whether it would straddle a
7 shift cycle or not.

8 MS. BARNES: So, yes. Okay.

9 The next slide talks about what the day
10 off requirements are during normal operations, non-
11 outage days. For people who are working 8-hour
12 shifts, they're require to have one day a week.

13 For people who are working an average 10-
14 hour shifts, they're required to have two days off a
15 week.

16 And then for people who are working the
17 longer 12-hour shifts, the number of days off they're
18 required to have depends on what job duties they're
19 doing for operating conditions. Maintenance has to
20 have two days off a week. Operation, HP, chem, et
21 cetera, an average of 2½ days off a week over the
22 shift cycle. These are average. It's not thou shalt
23 have two off each week. And armed security personnel
24 are required to have an average of three days off a
25 week spread over a shift cycle.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 And then we have another requirement that
2 those days off that are spread out over the shift
3 cycle have to ensure that individuals are getting at
4 least one of those days in every nine day period. So
5 that nobody's working longer than eight days in a row.

6 CHAIR STETKAR: Having never been an armed
7 security person myself, why the most restrictive
8 requirements for security personnel?

9 MR. DESAULNIERS: You want me to address
10 that? You've had them around?

11 CHAIR STETKAR: Oh, I've had them around,
12 that's right. But I also had operators around who did
13 things also.

14 MR. DESAULNIERS: It's consideration of
15 both the nature of the task that they're generally
16 involved with as well as the fact that they're
17 carrying arms. And so the task of a security office
18 can be very monotonous. They're spending long periods
19 of time, in some cases, in isolation just looking for
20 something to happen. So this is the classic
21 vigilance-type activity which is the area that is most
22 easily degraded by fatigue.

23 CHAIR STETKAR: Okay.

24 MR. DESAULNIERS: In addition to the fact
25 that once they decide to use deadly force, there's

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 little recourse.

2 MEMBER BLEY: That's a key thing. But not
3 to argumentative, but sitting on a panel for 8 hours
4 can be a little dreary.

5 CHAIR STETKAR: And having to respond
6 with, oh, a couple of minutes to something you don't
7 really expect to happen.

8 MR. DESAULNIERS: Well, generally those
9 individuals have other operators with them and there's
10 safety systems that will take into effort.

11 CHAIR STETKAR: Okay.

12 MS. BARNES: So that's how the security
13 personnel ended up with the higher number of days off.

14 Okay. We have different days off
15 requirements for outages for the individuals that are
16 covered workers under the rule. And the relaxation of
17 the operating hours or the operating days off, as Dave
18 mentioned earlier, extends for 60 days only and only
19 while the unit is in an outage.

20 So if an outage goes beyond 60 days,
21 there's some exceptions here. But general if it goes
22 beyond the 60 days, the individuals would go back onto
23 normal operating days off.

24 Okay. For maintenance personnel rather
25 than an average of two days off a week, they're

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 required to have one day off a week.

2 For operations, et cetera. they're
3 required to have three days off in each nonrolling,
4 non-overlapping 15-day block.

5 And then security personnel are required
6 to have four days off if they're on outage hours.

7 MEMBER BLEY: You folks raised it
8 somewhere, and I forget the resolution, what about
9 multi-unit sites where one units in an outage and
10 one's not.

11 MS. BARNES: We're getting there.

12 MEMBER BLEY: You'll get there. I didn't
13 see it, just thought I'd ask.

14 MS. BARNES: That's a big --

15 MEMBER BLEY: That's good.

16 MS. BARNES: Yes.

17 Okay. Now with regard to those 60 day
18 outage periods or any point in time at which an unit
19 is in an outage, you know the work for certain groups
20 ebbs and flows, even within an outage. So for example
21 if there are individuals during the 60 days, or
22 whatever period the outage is, put in a work week
23 that's not more 48 hours, put in a day period where
24 they haven't worked more than 48 hours, then those
25 individuals can work outage hours past the 60 day

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 limit.

2 So for example if you've got your
3 operators really busy at the beginning of the outage
4 and really busy at the end, if there's a week in there
5 where they're not overburdened and they're not working
6 excess hours to support the outage over a 7-day
7 period, then those individuals can work out under the
8 relaxed outage work hour limits for another seven days
9 past the end of the outage, whether it's 60 days or
10 whatever length it is.

11 In addition to which with regard to unit
12 outages at a multi-unit site the requirement in the
13 rule and the language that's in the rule limits the
14 individuals who are eligible to be working these
15 relaxed outage work hours to individuals who are
16 working on outage activities while they're working on
17 the outage activities.

18 Sorry?

19 CHAIR STETKAR: Keep going.

20 MS. BARNES: Okay. When the staff was
21 developing the rulemaking as late as the proposed
22 rule, certainly in our regulatory analysis where we
23 looked at the costs and benefits of implementing the
24 rule requirements, the staff's conception of this
25 while working on outage activity limitation was that

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 at a multi-unit site with one unit in an outage there
2 would continue to be a skeleton crew of covered
3 workers, for example maintenance folks and maybe an
4 NLO, you know the operating crew. There would be a
5 skeleton crew who would remain on operating hours.

6 Now the staff fully understood that
7 security is a site-wide activity. It didn't make sense
8 to try to split up between an outage unit and a non-
9 outage unit at a site which security personnel were
10 assigned to which unit. So we understood going on that
11 everybody in security would be on outage hours.

12 Similar arguments with regard to the HP
13 and chemistry folks.

14 MEMBER BLEY: Would not be on outage
15 hours? No, would be?

16 MS. BARNES: Would be on outage hours.
17 Because they would have site-wide responsibilities.

18 MEMBER BLEY: Because one of the plants is
19 operating?

20 MS. BARNES: Correct.

21 MR. DESAULNIERS: That doesn't parse for
22 me.

23 MS. BARNES: Okay. So anyway, we had
24 expected that some of these categories of personnel
25 would just be on outage hours, but that there would be

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 a subset who were on operating hours.

2 CHAIR STETKAR: Val?

3 MS. BARNES: Yes.

4 CHAIR STETKAR: I mean you're talking a
5 little bit about the rule but we're sort of morphing
6 into the Regulatory Guide a little bit.

7 MS. BARNES: Right.

8 CHAIR STETKAR: Because it interprets a
9 lot of these things.

10 MS. BARNES: Yes.

11 CHAIR STETKAR: Since you started talking
12 about outage hours and outage while working on outage
13 activities, this is from the NEI document not from the
14 Regulatory Guide, but the Regulatory Guide endorses
15 the NEI document, and it says "Outage activities or
16 activities associated with the outage unit and common
17 systems."

18 So, for example, if I have a multi-unit
19 site and I have a shared cooling water system between
20 two units at that site and I have a shared switchyard
21 and then a shared electric power distribution system,
22 people working outage hours, in other words relaxed
23 requirements, are allowed to work on those shared
24 systems even though they may effect the operating
25 unit, is that correct? It's a little bit akin to

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 Dennis' question regarding the security folks, but
2 this direct impact on systems that effect the
3 operating unit. Is that interpretation correct? So I
4 can have people working on these shared system, even
5 though they're working under the relaxed --

6 MS. BARNES: That was not the staff's
7 original intent. The original discussion in developing
8 the requirement was that if anybody performed
9 activities and touched the operating unit, they would
10 have to be on the more restrictive operating hours.
11 But really only maintenance and operations personnel.
12 But the other folks there was a case, in most cases,
13 for being on site-wide outage hours.

14 CHAIR STETKAR: I guess we're going to get
15 into the very special case of licensed operators in
16 the control room, obviously, once we get into the
17 substantive issues. But I didn't see any discussion
18 of these other types of situations where you have
19 either unlicensed operations personnel or maintenance
20 personnel, for example, working on shared systems with
21 one unit operating and those systems actually
22 affecting the operating unit or could affect the
23 operating unit.

24 MS. BARNES: In NEI 06-11 Rev. 11 that
25 we're endorsing, work on common systems that could

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 effect the operating unit would now be --

2 CHAIR STETKAR: Allowed to have --

3 MS. BARNES: Yes, outage hours.

4 CHAIR STETKAR: -- outage hours?

5 MS. BARNES: Folks that were performing
6 those activities.

7 MEMBER BLEY: At some point before we'll
8 done, you'll work into the logic of that for us?

9 MS. BARNES: Let's move on to talk about
10 that. He was talking about the rule. And then we'll
11 get into the Regulatory Guide.

12 MEMBER BLEY: Okay.

13 MS. BARNES: Okay. And finally, in the
14 rule we restricted the conditions under which licensee
15 management would be allowed to waive the work hour
16 controls. In the past we had some licensees where the
17 senior VP would write a waiver that applied to every
18 person on site, which was not the intent of the
19 guidelines or the NRC policy statement. And so we had
20 to spend time clarifying the conditions under which a
21 waiver of the work hour controls is clearly
22 justifiable. And so in the rule now a waiver is
23 permitted only for conditions that are necessary to
24 prevent or mitigate a situation adverse to safety or
25 security. You know if we've gotten sudden increased

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 threat conditions, then it makes sense to permit
2 waivers to occur. Or if we have individuals like the
3 operator at the controls that, you know, has to be
4 there and we've gotten into one of those two hour
5 situation where there's nobody there to play that role
6 that meets all of the work hour controls, there would
7 have to be permission to be able to cover those kinds
8 of periods where short term relief is needed.

9 But another thing that we added to the
10 requirements for waivers is that instead of making it
11 very logistically possible to write a waiver that
12 covers an entire group, we also require the individual
13 supervisor, the individual that's going to be working
14 under the waiver of one of the work hour limits, to do
15 a supervisory assessment face-to-face with the person
16 that's going to working the extra work hours.

17 So blanket approvals are not feasible
18 anymore. Now it requires the supervisor to go through
19 a process that's established in the rule to
20 essentially take a look at, you know, how much the
21 individual's been working, when was his or her last
22 day off, how long will they be working, what time of
23 day it is because people are more subject to commit
24 errors between 3:00 and 5:00 a.m. because of circadian
25 variations and so and so forth. And if there's an

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 indication that the person poses any kind of risk of
2 committing errors or so on associated with fatigue,
3 then the supervisor would be required under the rule
4 to establish controls and conditions under which the
5 individual could work. It might be additional peer
6 oversight and peer checking, or you know other kinds
7 of controls and conditions.

8 MEMBER ARMIJO: Is it possible still to
9 grant a waiver a group or a team, let's say a
10 maintenance crew doing maintenance on a safety system
11 that's got to get finished? And then you'd say well
12 this whole team of five guys, we need them to finish
13 this job.

14 MS. BARNES: Certainly, as long as they do
15 the individual supervisory assessment of each --

16 MEMBER ARMIJO: Assessment of each.

17 MS. BARNES: -- of the people in the crew.

18 To make sure that they're fit for duty.

19 MEMBER ARMIJO: Yes. Right.

20 MS. BARNES: And good to go for the
21 intended work they do.

22 MEMBER BLEY: And it's a pretty restricted
23 set of things for which you can do the waivers?

24 MEMBER ARMIJO: Yes, safety systems.

25 MEMBER BLEY: Right?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MS. BARNES: Right.

2 MEMBER BLEY: Yes.

3 MS. BARNES: Safety or security. Yes. You
4 have to keep someone on post because his relief isn't
5 there; those kinds of situations or increased threat
6 conditions.

7 Okay. Moving on the Regulatory Guide.
8 Even though the rule didn't get published March 31,
9 2008 and won't have to implemented until August 1st,
10 the stakeholders and the staff agreed that it would
11 worthwhile to start discussing what kind of
12 implementation guidance was needed for the fatigue
13 management provisions. And so we started holding
14 public meetings with the stakeholders in September
15 2006.

16 And over the period of time until the
17 staff put out the draft Regulatory Guide we had
18 received and NEI had submitted seven full working
19 drafts of the implementation guidance. And prior to
20 even submitting full working drafts, NEI was
21 submitting proposed words for particular areas of
22 guidance where lots of questions were coming up or
23 there were disagreements.

24 And so that 2½ year period has resulted
25 in the draft Regulatory Guide now. After we put the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 draft guide in September of 2008, we held another
2 public meeting and actually discovered that we had
3 some misunderstanding. And so in the draft final
4 guide we were able to correct those based on
5 conversations that we'd had.

6 And then as part of their public comments,
7 which the public comment period had ended the end of
8 October, NEI submitted a whole -- not a whole new, but
9 submitted a new draft, Rev. 1 of NEI 06-11 that they
10 asked us to endorse in the final Regulatory Guide
11 rather than Rev. E, which was the one that we had been
12 endorsing in the draft guide.

13 And so because we had some new guidance
14 that was included in Rev. 1 versus the revision that
15 we had seen previous to October 31s, the draft final
16 guides include some additional -- probably more
17 additions and clarifications than you would be used to
18 seeing in a Regulatory Guide.

19 The draft final guide that you're looking
20 at today has changes to it based on the staff's
21 agreement with some of the public comments that were
22 provided to us.

23 For example, we agreed with the comments
24 we received regarding the definition of predictive
25 maintenance activities, the scope of predictive

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 maintenance activities that should be considered
2 covered work versus predictive maintenance that should
3 not be considered work. That's a change between the
4 draft guide and the final one that we're looking at
5 now.

6 And then we also had some good suggestions
7 for additions and clarifications from other
8 stakeholders, particularly IBW who went over it
9 sentence-by-sentence.

10 So that's why you're seeing a lot of
11 additions and clarifications.

12 Two areas of substantive disagreements
13 still with NEI 06-11 Rev. 1, and that's the reason
14 that I've been talking so much about the minimum days
15 off requirements is because it's the application of
16 the minimum days off requirements where we've got the
17 substantive disagreements with Rev. 1. There's two
18 areas: One is NEI's concept of periodic overtime, and
19 the other one and the other one is the one we were
20 discussing earlier, which is about who is allowed to
21 work on the relaxed outage hours at a multi-unit site
22 with one unit or with units still operating.

23 Okay. With regard to periodic overtime,
24 just for your interest in case you didn't take time in
25 NEI 06-11 Rev. 1 itself, we gave you a handout that

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 includes the language directly from NEI 06-11 Rev. 1
2 regarding periodic overtime.

3 MEMBER BLEY: Before you get into that if
4 I can ask you one last question on the rule stuff you
5 went over.

6 MS. BARNES: Okay.

7 MEMBER BLEY: In the rule, as you talked
8 about it, you covered some and there are some other
9 things in there about activities that don't get
10 counted like shift turnover and things such as that.
11 But it seems like that one requirement that if you
12 come back to covered work within that time period, the
13 reporting period, all the hours that count. That
14 almost all of those things that don't count end up
15 getting counted anyway. Am I missing the boat?

16 I mean, if you do a shift turnover, you
17 don't count it. The next day you come on shift,
18 though, you're in the same reporting period. Now
19 wouldn't you count that thing that had been excluded
20 for one day? It looks to me like all of those go away
21 as soon as you come to work.

22 MR. DESAULNIERS: No. I don't believe the
23 intent is that you would all of a sudden be counting
24 the shift turnover again. The shift turnover is not
25 going to count in whether you're regularly performing

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 covered duties and never leave that status or you're
2 going in and out; shift turnover does not count. And
3 that was a decision made to ensure that shift turnover
4 was never kind of short-changed just to ensure that
5 you stay within the work hour limits. We didn't want
6 to put that pressure on operators or others that have
7 to convey critical information. The primary purpose
8 there was to ensure that they conducted a solid
9 turnover.

10 MEMBER BLEY: Okay. So, and these other
11 things that are specifically excluded from being
12 counted like participation in the drill, the same
13 thing? Those are really exclusion? They never come
14 back in the --

15 MR. DESAULNIERS: Right, those are real
16 exclusions. So really the intent there was to say an
17 operator has gone off and is supporting the training
18 center for six months as part of a rotation over
19 there. During that time they're not subject to the
20 work hour controls. But when they start to stand
21 watch, you want to ensure that if they've been working
22 substantial hours in the week prior to beginning their
23 duties, that you do consider the work hours at that
24 point.

25 MEMBER BLEY: Yes.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 CHAIR STETKAR: Or if somebody was in a
2 training week and they working four hours or six hours
3 or eight hours extra a day during that week on shift,
4 not necessarily at the controls but doing something
5 else, those hours would also count, right?

6 MR. DESAULNIERS: Yes.

7 CHAIR STETKAR: Okay. Okay.

8 MS. BARNES: Okay?

9 I know Russell is going to discuss the
10 periodic overtime guidance in the document after our
11 break here. But the staff's interpretation of what
12 NEI is proposing is that when it comes to deciding
13 which MDO requirements apply, NEI's proposed that the
14 licensee establish a shift schedule, you know make a
15 plan for what the shift schedule is going to be,
16 whether it's an eight, ten or 12 hour shift. Plan
17 what days off and when those days off should occur
18 that are associated with that shift schedule. And then
19 if during the plan shift cycle, it turns out that the
20 individual has to work more hours than anticipated to
21 meet emergent work or to cover for vacations, or
22 training periods, or for whatever reasons that
23 individuals would be allowed to go ahead and work
24 those unscheduled hours.

25 And then quarterly the licensee would go

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 back and take a look at any individuals who had worked
2 more than 54 hours per week, averaged more than 54
3 hours per week. Take a look at the circumstances that
4 necessitated the individual working those long hours
5 and then decide whether or not retroactively they had
6 made the appropriate decision about what shift
7 schedule that person was actually working and whether
8 or not they had intended to give that person the days
9 off associated with the shift schedule. So
10 essentially anybody that worked more than 54 hours a
11 week would go into their corrective action program and
12 they would take a look at what was happening.

13 Now the staff's position on the idea of
14 periodic overtime is fundamentally different from the
15 basic starting point here. As I had just described,
16 NEI is proposing that the applicable MDO requirements
17 are based on the schedule that you plan to have the
18 person work. The staff's position is that the
19 applicable MDO requirements are based on the actual
20 hours that individuals are working.

21 So with regard to emergent work and these
22 other considerations that the NEI 06-11 Rev. 1 would
23 consider to be reasons for staff to be working extra
24 hours, our position, the NRC's position is that the
25 regulation the way it's written already includes an

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 extensive amount of flexibility for licensees to be
2 able to handle periods of unscheduled work hours. And
3 probably more importantly, the Regulatory Guide
4 reflects a staff position that the periodic overtime
5 concept, the way NEI has laid it out, is inconsistent
6 with the rule requirements.

7 As NEI as proposed it, it would basically
8 allow unscheduled work hours, you know the extra
9 unplanned overtime, to be excluded from the
10 determination of how many days off the individual
11 needs based on how much they've worked. And the way
12 that we read it, it also would permit the licensees to
13 have people work extra work hours without meeting the
14 requirements that are in the rule regarding when a
15 waiver can be granted.

16 So not only do we think that the
17 flexibility exists in the rule to handle the
18 situations that periodic overtime is supposed o be
19 dealing with, but we also think that the way that NEI
20 is proposing to implement is inconsistent with the
21 rule.

22 So, again, you know talked about this
23 earlier. I'm going to beat it to death here.

24 The work hour limits that included in the
25 rule, as you can see, allow people to work a lot of

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 hours for short periods to handle emergent work
2 situations. And as Dave mentioned earlier though,
3 these kind of work hours aren't sustainable. People
4 have to have time off to rest.

5 In addition, staff's view is that the
6 minimum day off requirements, the way that the
7 Regulatory Guide and the rule allows licensees to
8 apply them provide for lots of flexibility in terms of
9 if they establish a six week shift cycle, there is a
10 lot of flexibility in terms of where those days off
11 can be assigned over the shift cycle.

12 And in this slide there's some discussion
13 of the kinds of work hours that people are allowed to
14 work and still meet the MDO requirements that apply to
15 the kind of job that they're doing.

16 For example, you know in the dashed
17 descriptions under the second bullet when you get down
18 to brass tacks and apply the NEI requirements and the
19 other requirements in the rule, you'll see that people
20 can work an average of 9-hour days. If they have on
21 average a day off a week, they can work up to 11-hours
22 a day. If they have an average of two days off a week
23 -- and this is over the long term. You know, this is
24 over the long term. And some categories of personnel
25 can work up to 13-hours a day on average if they've

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 got two days off a week.

2 So our perception is there's lots of
3 flexibility here.

4 CHAIR STETKAR: Now this is the place
5 where I had to actually sit down and run out shift
6 schedules for myself. And you may want to answer this
7 after the break. I want to make sure I understand
8 what this synopsis says.

9 MS. BARNES: Yes.

10 CHAIR STETKAR: I think because it applies
11 to averages over the entire -- if I take a six week
12 shift schedule because that's the nominal that seems
13 to be used in all the guidance. I think it means that
14 I could work six consecutive 12-hour days in a
15 particular week and then work six consecutive 9-hour
16 days in each of the remaining five weeks in that shift
17 schedule.

18 So I have one week of 12s, day off, five
19 weeks of six days a week 8-hours a day and still meet
20 the requirements in the Regulatory Guide because my
21 average hours per work day over that shift cycle comes
22 out to be 8 2/3. Now you can't do --

23 MS. BARNES: I can't do this in my head.

24 CHAIR STETKAR: -- in your so, so that's
25 why --

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MS. BARNES: I'm scribbling here.

2 MEMBER BLEY: Truly, is it an average
3 thing or is it --

4 CHAIR STETKAR: But the key is am I
5 thinking about this process correctly?

6 MS. BARNES: It's an average.

7 CHAIR STETKAR: That I have to meet the
8 number of hours off per day, which I do I meet the 10
9 hours minimum off per day; I must meet the one day off
10 per week, which I do I meet at least one day off per
11 week because I'm a nominal 8-hour per day shift
12 schedule. That's the important thing.

13 MEMBER BLEY: As long as you're averaging
14 the whole time --

15 CHAIR STETKAR: As long as my average over
16 the whole time is less than 9.000 hours per day
17 worked, I'm okay?

18 MR. DESAULNIERS: Yes.

19 MS. BARNES: Yes.

20 MR. SMITH: I'd like to clarify one thing.

21 Your example wouldn't work because we have to include
22 the 30 minute lunch period that we normal give the 8
23 hour workers, and therefore you would have gone to a
24 10-hour shift period for your six 12s would have
25 bumped over the 13 hours.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 CHAIR STETKAR: Thirteen hours.

2 MEMBER BLEY: Except you're allowed to
3 exclude break times?

4 MR. SMITH: Absolutely not.

5 MEMBER BLEY: But I thought I read those
6 words in the rule.

7 MS. BARNES: They're allowed to exclude
8 shift turnover.

9 MEMBER BLEY: But I saw breakdown, too.
10 No.

11 MS. BARNES: No.

12 MEMBER BLEY: Okay.

13 MR. SMITH: Break time it's long enough
14 that they could take a nap.

15 MS. BARNES: Yes.

16 MEMBER BLEY: Oh, that's right.

17 MS. BARNES: And there's --

18 MR. SMITH: About 30 minutes.

19 MEMBER BLEY: At their facilities?

20 MS. BARNES: Yes, it's right.

21 MR. SMITH: You could actually work 12s --

22 MEMBER BLEY: Yes, never mind. That's
23 right.

24 MR. SMITH: And then two sixes and the
25 rest of them sixes.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 CHAIR STETKAR: I mean when I was working
2 a 12-hour shift included that 30 minutes.

3 MR. SMITH: The 12 hours normally do, the
4 eight hour shifts normally do not. Ten hour shifts
5 normally do not. So when you get into your maintenance
6 and day workers, the 30 minutes --

7 CHAIR STETKAR: Okay. I'd like to
8 understand more about that.

9 MR. SMITH: Certainly.

10 CHAIR STETKAR: Because it does come down
11 to scheduling real people in real 24 hour increments.

12 MR. SMITH: Absolutely.

13 CHAIR STETKAR: In fact, I wanted to make
14 sure that I first had the concept of cumulative and
15 average over the entire --

16 MR. SMITH: Your concept?

17 CHAIR STETKAR: -- six week schedule was
18 the correct concept.

19 MR. SMITH: Concept is right one. It's
20 just one of the additional --

21 CHAIR STETKAR: It's the fine structure
22 that we need to talk about?

23 MR. SMITH: Absolutely.

24 CHAIR STETKAR: Okay. Thanks.

25 MS. BARNES: Okay.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MEMBER BLEY: I'm wondering now if first
2 line supervisors have to have a computer program
3 that's tracking the stuff.

4 MR. SMITH: Absolutely. In fact, as we'll
5 talk in my presentation --

6 MEMBER BLEY: Okay. I'll look forward to
7 that.

8 MR. SMITH: -- a first line supervisor
9 will get the brunt of this complexity.

10 MEMBER BLEY: Okay.

11 MS. BARNES: Okay. And then a final point
12 in terms of flexibility. We think this in the rule to
13 handle requirements and circumstances has to do with
14 the fact that waivers permitted. They're constrained,
15 but they are permitted.

16 So, on periodic overtime the draft final
17 guide that you guys are reviewing retains how the
18 staff handled the issue in the draft regulatory guide
19 that went out for public comment. What we have done,
20 however, is included more detailed guidance about
21 methods to implement the MDO requirements that we
22 would find acceptable, more detailed than what's in
23 NEI 06-11 Rev. 1.

24 So, that's the periodic overtime issue.

25 Ready? The next one as we've been

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 discussing all the way along here, is the minimum
2 shift compliment issue. NEI's position, and I know
3 Russell will clarify this during his presentation is
4 that at a multi-unit site where we have one or more
5 unit is an outage but we still have at least one
6 operating, NEI's position is that one RO, the operator
7 at the controls that's required in 50.54, and one SRO
8 the operator in the control room that's also required
9 in 50.54, are the only personnel that need to stay on
10 operating work hours. They're the only individuals
11 that should not be eligible for the more relaxed
12 outage work hours.

13 And so that's the minimum shift compliment
14 idea that NEI has proposed.

15 The staff's position differs, as we've
16 discussed. And the staff's position is that we can't
17 consider operators who are working on the operating
18 unit in the control room to be working on outage
19 activities. It's not their primary responsibility.

20 And the staff's position as described in
21 the Regulatory Guide is that the licensed operators
22 who are working on the operating unit should be
23 working on the more restrictive working hours, but in
24 recognition that some of the operators in the control
25 room during an outage when the unit is not operating

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 will be performing primarily outage activities. We
2 looked to the minimum shift complement table that's in
3 10 CFR 50.54(m) (2) -- I think it's (ii) and reduced
4 the number of operators that are required on shift by
5 the number that we think would likely be working
6 outage activities and have proposed in the Regulatory
7 Guide that only the operators, the reduced number that
8 are actually assigned to the operating unit, would
9 need to stay on the operating hours. And that all the
10 other operating staff would be eligible to work the
11 more relaxed outage hours.

12 Okay. Another handout that we have.

13 MEMBER BLEY: Just almost a philosophical
14 question about this.

15 MS. BARNES: Sure.

16 MEMBER BLEY: That retains during
17 alertness level we normal require for an operating
18 plant, a minimum number of people. My thought is is
19 that what we're really concerned about when we talk
20 about fatigue or we talking about the impact anyone
21 whose working with that machine might have on the
22 operations, which would seem to me the thing since we
23 require any people who interact with that normal when
24 all the units up and operating to be following those
25 rules.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 Any of those other people who aren't the
2 minimum required could do something that could create
3 a difficult situation. If it's reasonable to do this
4 during shutdown, why isn't it reasonable to do it all
5 the time? I'm just curious. It seems inconsistent to
6 me.

7 MR. DESAULNIERS: I think that, as Val had
8 indicated, the initial staff conception when this was
9 developed was that if you were putting your hands on
10 the operating unit, you would have been subject to the
11 operating requirements. And what you see here is
12 recognition that if you boil it down to the most
13 essential, you've got individuals that here are going
14 to be the ones responsible for responding to an event
15 should one occur. So --

16 MEMBER BLEY: Yes, but when they're both
17 operating, we don't limit it to just those people.
18 Because I think we're not just concerned about them
19 being able to respond, we're concerned about the
20 situations that anybody could create that would be
21 troublesome for us.

22 On the other hand, most of our outages are
23 now pretty short; two to three weeks. If that's true,
24 you've got a lot of flexibility within the operating.

25 Go ahead. But this just -- it seems a

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 place to me that doesn't quite fit to my thinking.

2 MS. BARNES: It's one of the places where
3 the difference between science, what science would
4 recommend, and what policy ends up concluding and
5 putting forward diverge.

6 Some of the considerations that we took to
7 heart that were put forward, particularly between the
8 proposed rulemaking and the final rulemaking with
9 regard to all those public meetings and discussions
10 that we had, was the industry position that because
11 outages are getting shorter and shorter, it's
12 increasingly difficult to attract transient
13 maintenance personnel. And it's going to be
14 increasingly difficult to bring in transient
15 maintenance personnel if they can't work the large
16 amounts of overtime that they previously have been
17 able to do. So that if we've got a certified welder
18 or someone with special skills that has a choice
19 between coming and working on an outage in our
20 industry or going and working at a coal fired plant
21 where they can work as many hours as the company wants
22 to give them, where are they going to go.

23 MEMBER BLEY: Maybe Russell will address
24 this. But most of those people are going to be working
25 on the plant that is in fact shutdown. Not the other

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 one. So I don't know.

2 I understand the argument. I'm not sure
3 why it would effect those extra operators who belong
4 to the plant who are assigned to the operating unit.

5 But let's go ahead.

6 MS. BARNES: Okay. Well, you know, that's
7 part of how we ended up relaxing on what our original
8 intent was was that if any maintenance worker touched
9 a component that was associated with the operating
10 plant, they had to be on operating work hours.

11 MEMBER BLEY: Yes.

12 MS. BARNES: So those are some of the kind
13 of considerations that changed the position we're in.

14 CHAIR STETKAR: Since we're doing okay on
15 time here, I think so far --

16 MS. BARNES: I know. I know.

17 CHAIR STETKAR: We'll stop that, though.

18 Something that stuck me is I kind of
19 understand the rationale behind this table. However,
20 did you think at all, and I know the industry doesn't
21 want to hear this but I'd like to hear your thoughts,
22 did you think at all about retaining the operating
23 work hour restrictions for the licensed ROs and SROs,
24 who also have responsibility for the shutdown unit?

25 MS. BARNES: I'll speak personally and,

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 you know, which is not a policy position and doesn't
2 represent any staff position, let alone NRRs who has
3 responsibility for this.

4 We know that fatigue, particularly
5 cumulative fatigue, affects teamwork. If we're
6 concerned about team work in a dual unit or multi-unit
7 site where they've got, you know, the control rooms
8 are in the same room and were thinking about having
9 some of the operators on one of the units in that
10 control room on outage hours versus operating hours,
11 what I came to was the conclusion that if we're
12 worried about team work, then yes. We should have
13 everybody on operating hours.

14 CHAIR STETKAR: Let's try to make the
15 question simple. Suppose I have a multi-unit site with
16 completely separate control rooms and completely
17 crews.

18 MEMBER BLEY: Operating crews.

19 CHAIR STETKAR: Operating crews. Never the
20 twain shall meet. Did you think about retaining the
21 more restrictive working hour requirements for that
22 independent crew on that shutdown unit? This is not
23 interactive crew dynamics in a shared control room.
24 It's simply the people who have the responsibility of
25 maintaining a safe configuration of the unit that is

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 shutdown.

2 MS. BARNES: That would be what we would
3 expect.

4 CHAIR STETKAR: They're allowed to have
5 relaxed work hours.

6 MS. BARNES: No. That they would be -- if
7 they're in a completely separate control room?

8 CHAIR STETKAR: Yes.

9 MEMBER BLEY: And you'd still have these
10 minimum number of people now instead of everybody?

11 CHAIR STETKAR: No. No.

12 MEMBER BLEY: I'm sorry.

13 CHAIR STETKAR: Let me take a crew sitting
14 in a crew room.

15 MS. BARNES: Yes.

16 CHAIR STETKAR: Let me take a single unit
17 site, let's avoid the multiple unit whole thing.

18 MS. BARNES: Okay.

19 CHAIR STETKAR: Single unit site. The
20 unit is shutdown. Everybody within the confines of
21 the fence can work relaxes hours, is that correct?

22 MS. BARNES: Correct.

23 CHAIR STETKAR: Okay.

24 MS. BARNES: Well --

25 CHAIR STETKAR: Is that correct?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MS. BARNES: Yes.

2 CHAIR STETKAR: Okay.

3 MS. BARNES: Although we would hope that
4 if someone was solely working on or only working on --
5 well no. In that case it's all at a site.

6 CHAIR STETKAR: No, it's a single unit
7 site. I'm trying to get to a certain point here, but
8 I want to make sure that I understand it.

9 MEMBER BLEY: Got it. One unit in a
10 outage. Okay. I'm sorry.

11 CHAIR STETKAR: I want to make sure I
12 understand the Regulatory Guide and the rule.

13 MS. BARNES: Yes.

14 CHAIR STETKAR: So take my single unit
15 site where the unit is now in a outage. And whatever
16 that outage needs. Everybody can work relaxed hours
17 under those conditions.

18 We have done in the United States a
19 limited amount of risk assessment and a more extensive
20 amount of risk assessment world wide to show that
21 although the reactor is subcritical, the risk being in
22 an outage is non-zero.

23 MS. BARNES: Right.

24 CHAIR STETKAR: In fact, some risk
25 assessments have shown that it can be a measurable

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 fraction of the risk during power operation.

2 In fact, some risk assessments have shown
3 that it can be a measurable fraction of the risk
4 during power operation.

5 There have also been a number of
6 documented events where because everything is in
7 manual and many automatic safety systems are disabled
8 during outages where personnel errors have contributed
9 to precursor events; drain down events, losses of
10 cooling for some extended period of time. And in many
11 cases discussions with people involved do come back to
12 things like excessive work load during outage
13 conditions, inattentiveness because supervisors are
14 trying to coordinate many simultaneous operations and
15 maintenance activities related to the outage.

16 So my question is under those
17 circumstances is there any incentive to have a minimum
18 compliment of responsible supervisory personnel,
19 licensed operators in the same sense, who do not have
20 relaxed working hour conditions?

21 MS. BARNES: Those considerations occurred
22 long before my time. So --

23 CHAIR STETKAR: Okay. That's what I was
24 going to ask you.

25 MEMBER BLEY: Once again, I'm going to

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 shift the hard one to Dave.

2 CHAIR STETKAR: And it's not within the
3 rule because it's in the Regulatory Guide

4 MS. BARNES: Yes, it would be --

5 CHAIR STETKAR: It would be in the
6 Regulatory Guide. It's the interpretation of the--

7 MS. BARNES: Well --

8 MR. DESAULNIERS: I'll speak to the very
9 earliest meetings of the rulemaking process and the
10 concept that staff put forward that the requirements
11 would be largely risk-based. And that consideration of
12 -- or risk informed. I won't say risk-based. Because,
13 you know, insights from the low power shutdown risk
14 were fresher than they are now. And there was -- you
15 know, that was clearly on our mind.

16 I think the general reaction was well that
17 sounds like a great concept in concept. It was not
18 perceived as practical to try to implement changing
19 requirements for work hours based on changing risk
20 profile of the plant as it changed throughout the
21 outage. Okay.

22 You asked a slightly different question.
23 And I guess you suggested maybe --

24 CHAIR STETKAR: I wasn't trying to
25 micromanage personnel hours through an outage.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. DESAULNIERS: Right.

2 CHAIR STETKAR: I was trying to more
3 micromanage --

4 MR. DESAULNIERS: Right.

5 CHAIR STETKAR: -- the types of things
6 that show on the graphic that's up there now in terms
7 of --

8 MR. DESAULNIERS: Well, it's great insight
9 now. In hindsight, we didn't have that at the time.
10 It's just to look at it from that macro level at the
11 time, we actually the initial concept was can we
12 change work hour controls based on the risk profile of
13 the plant as you're going through the outage. And that
14 was just considered --

15 CHAIR STETKAR: No, that's -- that would
16 probably --

17 MS. BARNES: Too hard.

18 MR. DESAULNIERS: Too hard.

19 CHAIR STETKAR: -- be difficult. Yes. I
20 was just --

21 MR. DESAULNIERS: That's where we were. So
22 we didn't consider your concept early on.

23 CHAIR STETKAR: Okay. Thanks. Thanks.
24 Control.

25 MS. BARNES: We did consider, and I

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 thought you were going to mention something about that
2 as well, not having a difference between outage and
3 operating hours.

4 CHAIR STETKAR: That's essentially what --

5 MS. BARNES: Right.

6 CHAIR STETKAR: -- I was questioning. You
7 know, we went off into the multi-unit, multi-control
8 room type thing.

9 MS. BARNES: Right.

10 CHAIR STETKAR: But it eventually comes
11 back to that single unit site whether it's operating
12 or shutdown, should there be different restriction?
13 And I'm not talking here about we've raised questions
14 about the unlicensed operators, maintenance personnel,
15 security personnel at that single unit site if it's
16 easier to think about a single unit.

17 What I'm talking about is because we have
18 this graphic in front of us, the minimum compliment of
19 licensed operating personnel, SROs and ROs at that
20 site, differentiating between whether the reactor is
21 in an outage or not in an outage, which is I think
22 what you were saying.

23 MS. BARNES: Well, we didn't think about
24 it in terms of operators only. But we --

25 CHAIR STETKAR: But this is applied

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 specifically to operators.

2 MS. BARNES: That's right. Right.

3 CHAIR STETKAR: They're the only folks who
4 fall within this restriction?

5 MS. BARNES: That's right. And we had not
6 considered having all for the operators, whether the
7 unit was shutdown or not, staying on operating hours
8 as a class during the Regulatory Guide.

9 Now did you consider that during the
10 rulemaking?

11 MR. DESAULNIERS: And you provided
12 actually a good clarification. The earliest part of
13 the rulemaking, you know, initial concept that was put
14 on the table was there would be no distinction between
15 outage and operating as arbitrary changes in states.
16 That it would be more risk informed based on a
17 configuration of a plant regardless of whether it's
18 shutdown or operating.

19 MS. BARNES: And during the public comment
20 period on the proposed rule we had a lot of commenters
21 not NEI or industry organizations, per se. Say, like
22 the National Sleep Foundation sent us extensive
23 comments that said, you know, what's the basis for
24 these outage relaxations. Not risk arguments in the
25 way that we think of it, but risk in terms of the risk

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 effects or the impacts of fatigue is the impact of
2 fatigue whether you're in an outage or not.

3 All right. Now with regard to the history,
4 we've hit this already. But as we just said, we
5 disagreed with NEI 06-11 Rev. 1 that ROs and SROs who
6 are on the operating unit responsible for the
7 operating unit could be considered to be primarily
8 working on outage activities.

9 And then there's some discussion on the
10 next slide about the regulation basis for the staff
11 position. And we've couched the argument in terms of
12 the 50.54 minimum shift staffing table. And our
13 thinking was that the regulation, the 50.54(m)(2) et
14 cetera regulation expects more one RO and one SRO in
15 units that are operating.

16 So our position is that not only do we
17 want the operator at the controls and the senior
18 operator in the control room of the operating unit to
19 be on operating hours, but we also want whoever is
20 going to be relieving them, we want a backup. We want
21 backups who are on the more stringent work hour
22 controls for the operating unit to be at the controls
23 of the operating unit.

24 CHAIR STETKAR: This does come back to a
25 slight deviation between -- since your graphic shows

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 50.54 (m) .

2 MS. BARNES: Yes.

3 CHAIR STETKAR: 59.54 (m) (2) (i)
4 specifically says that for the purpose of this table,
5 and they have a tabulation, "a nuclear power unit is
6 considered to be operating when it is in a mode other
7 than cold shutdown or refueling --"

8 MS. BARNES: That's right.

9 CHAIR STETKAR: " -- as defined by the
10 unit's technical specifications." So we do get into
11 this where according to 50.54 we need a specific
12 minimum compliment while the unit is whatever
13 operating means. And yet for an outage unit, a unit
14 that is connected to the electrical grid, I can allow
15 those folks to have relaxed work hours according to
16 the Regulatory Guide. Even though the unit is
17 operating according to 50.54?

18 MEMBER BLEY: It's critical, it's at some
19 level of power.

20 CHAIR STETKAR: It's critical, it's at
21 some low power level. It's just simply not connected
22 to the electrical grid.

23 MS. BARNES: And this is an area where to
24 change it we would need a rule change. We would need
25 to do a rulemaking because --

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 CHAIR STETKAR: Yes, because the problem
2 is--

3 MS. BARNES: -- the definition in the rule
4 is so specific about when the work hour limits. Yes.

5 CHAIR STETKAR: And drafted --

6 MS. BARNES: It's a philosophical
7 difference.

8 MEMBER BLEY: Yes, that is the rule.
9 Okay.

10 CHAIR STETKAR: It's unfortunate it is in
11 the rule. If you read the two rules, there's a gap.

12 MS. BARNES: Yes. Yes. Right. There's a
13 difference.

14 CHAIR STETKAR: There's a gap. Okay.

15 MS. BARNES: Okay. And in addition to the
16 definition of who is responsible for ensuring the safe
17 plant operations at an operating unit, the philosophy
18 behind the 59.54(m) (2) et cetera table.

19 NRC has also issued a couple of policy
20 statements that are pretty darn clear about what the
21 expectations are of operators in the control room at
22 an operating unit, including the policy statement on
23 conduct of operations and our Regulatory Guide 1.114
24 which basically also provides conduct of ops types
25 guidance to control room operators. And both of those

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 are very clear that the expectation is that the
2 operators in the control room of an operating unit
3 will be alert and paying attention at all to be able
4 to detect and prevent adverse events, as well as to
5 respond to and mitigate anything that occurs.

6 And so consistent with the expectation
7 that they're going to be awake and alert, the staff's
8 position is that those people should be on normal
9 operating work hours so they'd have adequate
10 opportunity to rest.

11 And I have a recapitulation of what we
12 perceive NEI's position to be. I'm not sure if you
13 want to discuss this. But NEI would -- yes.

14 CHAIR STETKAR: He'll have a chance.

15 MS. BARNES: Right.

16 MR. SMITH: On your slide, I do believe
17 those Regulatory Guide also suggest that the operators
18 on a shutdown unit be alert and able to respond to
19 alarms also. It's not like they simply say when you're
20 at an operating unit you should be alert and
21 responsive to alarms. I believe that's correct for
22 the Regulatory Guide you had previously.

23 MS. BARNES: Well, of course we want them
24 to be alert.

25 MR. SMITH: I'm just completing the other

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 half that you said that at the operating unit they
2 would be. I want to make sure that we all agree that
3 at a shutdown they would also be Regulatory Guide
4 also.

5 MS. BARNES: But because they will have
6 fewer days off and will be working longer hours than
7 normal, the possibility that the operator's working
8 outage hours will be subject to cumulative fatigue,
9 especially as the outage goes on, is increased over
10 operators who are working normal hours with the
11 additional days off. Not that they'll be unsafe.
12 They're just more likely to be 00

13 MEMBER BLEY: The rule allows it.

14 MS. BARNES: Yes. Okay.

15 So what we have done to try to increase
16 the -- take into consideration the flexibility issues
17 and implementation issues that NEI has continue to
18 raise is between the draft Regulatory Guide and the
19 draft final, which you are reviewing now, we've made
20 some changes.

21 One of the changes we've made between the
22 draft Regulatory Guide and now is relaxing some of the
23 requirements for operators who are transitioning onto
24 the operating unit from the outage unit.

25 This is an error in here.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 We also are permitting operators who have
2 been working outage hours to provide relief for
3 operators on the operating unit under certain
4 circumstances. That is if an operator who has been
5 working operating hours is not immediately available.
6 For example, if the SRO is off in the outage work
7 control center and the SRO in the control room needs
8 relief, if there's an SRO available who has had two
9 days off in the last seven under the three day off
10 requirement spread out over the 15 days, that SRO can
11 come in and provide relief. It's just a little
12 additional flexibility.

13 And we've also clarified because there
14 seemed to be a misunderstanding about this, that if
15 there is an operating who is staying on operating work
16 hours, they are available and are permitted under the
17 rule to go to the work control center and review work
18 packages or whatever for the outage unit. It's just
19 that they have to have the additional days off.

20 So that's what we've done in the draft
21 final Regulatory Guide.

22 And so, to wrap this up, I can't believe
23 we still have time, as I said early on we're intending
24 -- we have to get the Regulatory Guide out there. We
25 have to get the final Regulatory Guide published. So

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 we're intending to have it published no later than the
2 end of May, hopefully sooner.

3 And I wanted to thank the Subcommittee as
4 well as the Committee for being willing to put up with
5 our changing versions that have been coming into as
6 we've been working to finalize this. And for talking
7 for us at this schedule meeting time.

8 CHAIR STETKAR: Okay. Anybody, Committee
9 members have any additional questions at the moment?

10 MEMBER ARMIJO: I'm sorry I had to step
11 out.

12 But I had a question. Assuming, and it's
13 related to enforcement of the rule. Let's say you had
14 a situation where you had a utility could demonstrate
15 that a particular worker met all your requirements to
16 the letter, that's man days off and hours worked, all
17 that sort of stuff, but you still, you find the guy
18 sleeping. What happens to the licensee in that case
19 and what can the licensee do with that employee?
20 Obviously, something different work. Do you address
21 that in your enforcement guidelines under this one, I
22 guess is what I'm saying or what?

23 MS. BARNES: You want to take that or the
24 considerations that are going into these kinds of
25 situations, Fred?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. BROWN: Fred Brown from NRR again.

2 And if I understood the question, we have
3 a regulations that's designed to minimize the impact
4 of fatigue and, hopefully, maximize safety within a
5 cost benefit range. It's not an absolute, though.
6 And inattentiveness can occur. What do we do if the
7 Subpart I has been complied with but inattentiveness
8 still occurs? And we would process that through the
9 same sort of assessment and regulatory assessment and
10 enforcement process that we go through today.

11 If the inattentiveness results in a
12 violation, not of Subpart I but some other
13 requirement, then we would take enforcement action as
14 a result of that.

15 And so what that means I think in synopsis
16 to your question is does the licensee only have to
17 implement the process in the rule or do they also have
18 to take other reasonable means that safety functions
19 are performed and security functions are performed?
20 And it's the latter.

21 MEMBER ARMIJO: Okay.

22 MEMBER BLEY: Just something you said
23 leaves me a little -- it sort of sounds, you said some
24 other violation than Subpart I which kind of means if
25 the guy falls asleep and he's lucky at one level, and

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 if he's unlucky and something happens, it's at a
2 different level of enforcement. Is that right?

3 MR. BROWN: Well, minimum staffing in the
4 control room being another requirement. So
5 inattentiveness which defeats minimum staffing would
6 be a violation of 59.54(m) or a tech spec.

7 MEMBER BLEY: Okay.

8 MR. SMITH: Just from the industry, just
9 we will have programs and processes. We expect the
10 person to be fit for duty. So this rule also covers
11 drug and alcohol, so it would be similar to that if
12 you found a person that had busted their drug and
13 alcohol. Now we also look at fatigue. The person
14 would have had training. IF they were an unescorted
15 worker, they would have been introduced to the self-
16 declaration portion. There are several barriers that
17 that person broke, work hour restrictions
18 withstanding, to get to a sleep on duty at a nuclear
19 plant.

20 MEMBER BLEY: Yes.

21 MR. SMITH: So we have actions we would
22 take to the licensee for not following procedures and
23 policies with the individuals. And the supervisor
24 also has a behavioral observation stake in that arena
25 in that also.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MEMBER ARMIJO: Okay. Thank you.

2 MEMBER BLEY: We have a couple of minutes
3 left. And we'd raised a couple of issues earlier that
4 we put aside to see if we'd get through this. One was
5 experience with self-declaration and that's worked and
6 how, I guess, whatever -- in the NEI guidance it tells
7 the licensee what things to do but it doesn't quite
8 tell them how to do. So if somebody's self-declaring
9 a fair amount, has that been a problem anywhere? Are
10 the plans that people are putting together under the
11 NEI guidance going so far as to suggest the kind of
12 medical help that might be important for whom you
13 don't know why they're having terrible and they're
14 self-declaring a lot? Is there anything on either of
15 those that anybody can note?

16 MR. DESAULNIERS: Just I wasn't sure if
17 you were directing your question to Russell Smith as
18 part of industry experience or what our expectations
19 are?

20 MEMBER BLEY: I'd like to hear both of you
21 have to say about it.

22 MR. DESAULNIERS: Just so I'm a little
23 clearer on your question. I understood you to be
24 asking if there was experience with individuals self-
25 declaring repeatedly that were ultimately referred to

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 getting additional medical assistance?

2 MEMBER BLEY: Well, that's part of it.
3 The question is have there been cases now that we have
4 the self-declaration stuff in place and the
5 assessments, such that we've had experience with how
6 often it happens. If it's repeated and how we've
7 dealt with how the licensees and your supervision of
8 it have dealt with people who have self-declared
9 repeatedly?

10 MR. DESAULNIERS: Well, I guess, first
11 keep in mind that's -- we've got limited experience
12 here with the rule having been in place.

13 MEMBER BLEY: But we've had something like
14 this before --

15 MR. DESAULNIERS: But we had this before
16 security.

17 MEMBER BLEY: Yes.

18 MR. DESAULNIERS: And for security. That
19 has been an area of concern. It was concern to the
20 point back in 2002 that the agency issued a regulatory
21 issue summary that specifically addressed self-
22 declaration because the concern a that time where
23 individuals were not really clear on what their
24 protections were for self-declaration.

25 We had instances where individuals were

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 adamant that they were not fit for duty and therefore
2 refused to work. And so it was part of that
3 regulatory issue summary. We clarified that the act of
4 self-declaration is a protected activity under 50.7
5 but that the refusal to work was basically
6 insubordination. They've satisfied the expectation to
7 raise the concern. It was then the responsibility of
8 the licensee to make a determination as to whether or
9 not that individual was in fact fit and then allow the
10 individual to either be dismissed from work or
11 continue on with their duties.

12 And so that regulatory issue addressed
13 that matter. I don't believe that that has, perhaps,
14 fully resolved the case because I know that we
15 continue to receive concerns at this agency with
16 respect to self-declaration as to whether or not
17 individuals feel as though they've been hurt or feel
18 freely free to do that.

19 Now with respect to individuals getting
20 referred to medical help, I know of one instance where
21 there was, you know, through a case of repeated
22 instances, I don't know if it was self-declaration as
23 well as observed behavior. It was recognized the
24 individual did in fact have a sleep disorder that was
25 contributing to his repeated instances of

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 inattentiveness. And we would hope that as a result
2 of this rule and the education that will be required
3 through the training requirements that such
4 identifications will occur on a more routine basis to
5 ensure that those cases are identified as necessary.
6 And that the expectations with respect to you need to
7 make a clear self-declaration, and when you do this is
8 what you can anticipate will happen. This is the
9 licensee's policy with respect to processing these
10 instances and whether or not your concern has not been
11 adequately resolved.

12 Does anyone want to add anything?

13 MR. SMITH: I can really add much. I don't
14 have specific numbers. You know, we have a large work
15 force, certainly. We have single individuals out
16 there that have time-to-time abused or try to take
17 advantage of situations that they're in. So put those
18 individuals aside, I'm not aware of generic industry
19 concern with the use of self-declaration, especially
20 in the security area.

21 We have made it clear through the NEI
22 document that they need to have included this in their
23 policy and procedure that makes it clear when they're
24 doing a self-declaration for fatigue. You can't have a
25 worker walk by a supervisor and say, "Hey, I'm not

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 tired today" and that's all of a sudden a self-
2 declaration. You know, that's a common term, you walk
3 by and say "How are you doing?" And somebody says
4 "I'm a little tired." Well, that just doesn't cut it
5 for self-declaration.

6 So we've been specific on getting the
7 training done for the individuals that if you are
8 self-declaring for fatigue, since it's a new item, if
9 you say something very specific --

10 MEMBER BLEY: I suspect for a lot of
11 people it would be hard to decide that I should self-
12 declare. I mean all of us, depending on what happens
13 in this room sometimes, you drift off. And people
14 first time on the night shift, every time they come
15 back certainly some have trouble staying awake. So
16 when is the point when it's normal and when is it the
17 point you have to declare?

18 I guess you guys are all working on this.

19 MR. DESAULNIERS: By the time you're
20 questioning, you're probably too late is generally
21 what the research would -- it's like people fall
22 asleep behind the wheel. Behind the time that you
23 recognize that you're quite tired, you're already
24 pretty impaired. So some declaration has some
25 limitations from that perspective because you tend to

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 underestimate it for the most part.

2 CHAIR STETKAR: Well, but part of that is
3 the requirement for formal training of anybody whose
4 badged to theoretically be sensitive to that.

5 MR. DESAULNIERS: Yes, and recognize that
6 that is a limitation.

7 MEMBER BLEY: Okay. Thank you.

8 MS. BARNES: You know, we're hoping that
9 the training and the licensee procedure and policy --
10 I mean you have a new baby at home, you know what do
11 you do? There's no need for any kind of punitive
12 actions there whatsoever. You know, so what the
13 licensee's responses to that? You put them on to
14 noncovered work so that, you know, it really doesn't
15 matter if they're not fully attentive at all times and
16 able to monitor and so on and so forth. So there'll
17 be a lot of situations coming up.

18 CHAIR STETKAR: Anything else?

19 MEMBER BLEY: I guess not.

20 CHAIR STETKAR: Well, with that we'll take
21 a break until, and I'm being a big break guy, 3:15.

22 (Whereupon, at 2:55 p.m. off the record
23 until 3:15 p.m.)

24 CHAIR STETKAR: Okay. We're back in
25 session.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 And I've been asked to remind everyone
2 that if you're here, please make sure you signed in so
3 we have a record of who is attending the meeting.

4 And with that, I guess we'll turn it over
5 to Russell Smith and find out what NEI has to say
6 about all of this.

7 MR. SMITH: All right. Thank you very
8 much. I hope I didn't run the rest of your Committee
9 off.

10 CHAIR STETKAR: They'll be back.

11 MR. SMITH: I know I'm not real soothing
12 to look at, but come on guys.

13 My name is Russell Smith. I've been with
14 NEI about a year and been working on the fatigue
15 management rule.

16 I'm a 27 year Luminant employee, still a
17 Luminant employee on loan to NEI. Luminant operates
18 Comanche Peak Station down in North Central Texas,
19 beautiful Glen Rose, Texas.

20 I was 22 year holder of a senior reactor
21 operator's license that I got to get rid of in 2006.
22 Five years of that was as a control room supervisor.
23 I've been a manager in system engineer, maintenance,
24 operation. Last job was I was the Direction of
25 Operations for Comanche Peak for 2003/2007. So that

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 included ops, procedures and chemistry groups. And
2 now I get to do NEI for another year and go back and
3 run a real plant again.

4 Anyway, just a couple of comments on
5 things that were discussed earlier and I didn't really
6 butt in at the time.

7 On root cause analysis, I'm certainly not
8 aware of what the NTSB or the Coast Guard is doing,
9 but I am aware of what Comanche Peak does. I was an
10 engineer there for many years, root cause qualified.
11 And for several years we've considered task demands as
12 part of our root cause analysis. And I think that's
13 common at any nuclear site you go to.

14 In our industry we do take seriously
15 events, and root cause analysis I think you would go
16 back and find if there was a fatigue related incident,
17 we would have captured that in our root cause
18 analysis.

19 And leads me, we are not aware of an event
20 that's occurred at a nuclear station that the primary
21 cause of that event was a fatigue related cause. So
22 tie that together.

23 The other item I just want to overview on,
24 we've talked a lot about and we're going to talk a lot
25 more about minimum days off requirements. And I just

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 wanted to make sure we're all aware, you know minimum
2 days off requirements is only one of the numerous
3 barriers that are in the rule to help us manage
4 fatigue. It is not the end-all that tells you whether
5 you are fatigued or not fatigued how many days off
6 you've had in the cycle. And I wrote down all the
7 ones I could think of just off the top of my head.

8 We've got maximum hour limitations that
9 you saw up here, the 16/26/72; those don't change
10 during an outage. They're consistent throughout.

11 Breaks. 10-hour, 34-hour breaks, those
12 are consistent through outage. They don't change.

13 Training, consistent. Self-declaration,
14 behavioral observation review, schedules, policies,
15 procedures, waivers, fatigue assessments; all those
16 are consistent through outages.

17 The only relaxation in the rule during an
18 outage period is this minimum days off which allows
19 your maintenance group to work a 72-hour week for a
20 short period. They're limited to 60 days in duration.

21 I think last year our average for outage
22 when you look at it was a little under 30 days for the
23 industry. So we're not seeing long outage.

24 I just wanted to bring that up. We talked
25 a lot about minimum days off, but that's only, you

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 know, one small -- not small, one barrier of the rule
2 that's there. All these barriers are still in place
3 during an outage.

4 MEMBER BLEY: Does NEI, for lack of a
5 better word, buy into the argument on cumulative
6 fatigue and that days off are the real thing to help
7 for that?

8 MR. SMITH: We support the rule, I guess I
9 could tell you that. Best political answer.

10 I've heard a couple of times I've only
11 been associated with the rule a year, but that NEI
12 suggested the minimum days off requirements. So I
13 guess I would suppose that we support them since we
14 suggested them. But that always brings to mind I think
15 if we brought that politician back from 1800s that
16 said that income tax is a good deal and showed them
17 what the income tax rule is today, they'd go "Oh, my
18 God. That's never what I thought."

19 I think we suggested that minimum days
20 off, we probably -- if I could find that person, which
21 I've not been able to find that person, and said "Is
22 this what your concept of minimum days off was? It'd
23 be an interesting response. But I would say we
24 support the rule and we've worked long and hard on it.
25 There's a slide 2006 we started. There's been 18

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 drafts and two revisions of NEI 06-11 guidance. And
2 we're down to just a couple of disagreement. So a
3 majority of the industry and the staff agree on how
4 this is going to be implemented and we need to discuss
5 these two items.

6 With that, I'm going to at least talk you
7 through what we've been doing, at least in the last 18
8 months to get this rule implemented. And this is a
9 complex rule. We schedule 2500 maintenance activities
10 during a 25 day outage. But scheduling for this rule
11 is every bit as complex and requires a software
12 routine that's every bit as powerful as what we use for
13 our outage scheduling. So the implementation of this
14 rule is no easy task.

15 March 31, 2008 the rule was issued.
16 October 1, 2009 we will all be in compliance with the
17 rule. I mean that's the guaranteed the rule is what
18 the rule is. We're not as an industry attempting to
19 change any portion of the rule. We've not asked for
20 that.

21 So NEI's done a lot of work with 06-11.
22 October 2008 we put out Revision 1.

23 NEI in the last year we've conducted one
24 day training sessions for every utility project
25 manager. Every utility out there has assigned a

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 single point project manager. We have had a one day
2 seminar with every one of those individuals. So been
3 able to talk with them. Those happened in March of
4 last year.

5 We had our first workshop back in May of
6 2008. That was in conjunction with the staff. They
7 came in and helped us out with that. Well received. We
8 did another one in February. Once again the staff
9 came in and helped us with that. That was two weeks
10 ago. The industry has already told us we will do a
11 third this summer.

12 We plan to do several pilots during this
13 spring outage season. I've got about three plants that
14 have already volunteered to present the pilot results
15 at a workshop. So we will schedule a third workshop
16 this summer. We'll go over the pilots that the
17 industry are doing and go over lessons learned from
18 that. And, of course, we'll invite the staff to come
19 and give us their updates on inspection guidance.

20 What the industry has been doing. Every
21 station, and I checked this just before the workshop,
22 all the stations have their procedures and policies
23 updated. So if you go to a station if they aren't in
24 the books, they've already got them in the background
25 waiting to put them in there. So we did not even have

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 a session on procedures and policies at our workshop
2 because utilities are past that. They're beyond that.

3 Work-hour tracking software is in
4 development. There's not a site that has that in
5 production yet. One of the issues that we'll talk
6 about that we're disagreeing a little bit with the
7 interpretation certainly effects the software
8 development. But guarantee our utilities understand
9 who writes the regulation and the software is being
10 developed to the Regulatory Guide and we're moving
11 forward with that. But we don't have one there
12 working yet. I believe the first roll out and
13 implementation on a plant LAN was to occur this week
14 in support of a pilot for an outage. So we'll be
15 getting more information on that.

16 Training. There's a significant amount of
17 training that's involved in this rule. INPO took on
18 the training tasks for the industry. They have updated
19 the NANtel General Employee Training. Anyone that has
20 taken access for a badge at a plant site since last
21 October through the NANtel system has received the
22 training required by the fitness for duty rule for
23 fatigue. So that's a high percentage of our badged
24 employees have had that training.

25 The second part of this training is the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 fatigue assessment. And you've heard about that.
2 Supervisors and fitness for duty personnel will do
3 fatigue assessments on personnel when they self-
4 declare or when we have an event, or when we want to
5 do a waiver. And INPO is developing a general
6 training for use across the industry.

7 And the most important one is that bottom
8 bullet is the employee communication campaigns. The
9 required training by the rule doesn't teach you the
10 complexity of the rule. The required training of the
11 rule teaches you how fatigue affects your performance,
12 how you create a lifestyle that improves your fatigue
13 outlook at work, how to recognize fatigue and that
14 type. But it doesn't go into the complexities of the
15 rule. So we're doing that in addition to the required
16 training by the rule.

17 This rule is impacting people's
18 pocketbook. Their paycheck will change when this rule
19 comes out. And when you change people's pocketbooks
20 you'd better have talked to them about it. So if you
21 look at this rule, it impacts those people that are
22 working a lot of overtime right now. But it also
23 impacts those people that are not working a lot of
24 overtime right now because they're going to have to
25 come up to meet the overtime that the ones that are

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 volunteering for it are no longer going to be able to
2 accept. So the quality of life of both ends of the
3 spectrum are going to change for employees on this
4 rule. They need to know that.

5 I have done four conferences with our
6 union brotherhoods. I've talked to IBW twice and the
7 building construction trade division twice. And we'll
8 be going out in April to talk to the Utility Workers
9 of America Association. They're all very interested
10 in the bottom line and how is this going to impact the
11 quality of life of the people that they represent. So
12 we're doing quite a bit of communication in those
13 areas.

14 Any questions at all on what the industry
15 is doing or thoughts or comments?

16 MEMBER RAY: Well, just sympathy is all.

17 MR. SMITH: Well, thank you.

18 MEMBER RAY: I mean I, like you, have run
19 union contracts for years on power plant sites. UWA
20 will be a real challenge, trust me.

21 MR. SMITH: My first interaction with them
22 will be in April. They have started on the west coast
23 negotiating. As you know, San Onofre has a steam
24 generator outage coming up in the fall. And we have
25 started --

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MEMBER RAY: Nothing like the IBW, I'll
2 tell you. I had them both.

3 MR. SMITH: Absolutely. IBW contracts, I
4 would say probably half of them have been negotiated
5 at this part. So we are stepping forward to that. It
6 adds complication to that process, as you can well
7 tell.

8 You know, we do have two issues that NEI
9 will continue to pursue for the industry. Those deal
10 with minimum days off requirements. My bullets are
11 outage and then what determines a worker's schedule.

12 The first for the outages. I just put the
13 rule language. You know, it's a 60 day window that
14 you get the relaxation. It only applies for the
15 minimum days off for covered workers. And it only
16 applies while those individuals are working on outage
17 activity. That's what the rule says. And as we talked
18 before, what the industry asked for was some guidance
19 on at multi-unit stations when you're in an outage who
20 is eligible for this minimum day off.

21 And the way we looked at that, minimum
22 days off is an average.

23 MEMBER RAY: Eligible makes it sound like
24 it's something you want.

25 MR. SMITH: Absolutely.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MEMBER RAY: You got to call it
2 requirement for minimum day outage. It's not going to
3 be something people want.

4 MR. SMITH: Well, actually --

5 MEMBER RAY: Many of them.

6 MR. SMITH: We're finding out most of them
7 do want the extra hours through an outage. I don't
8 know whether it's social norm that we've come to
9 expect, but actually our workers when they come to an
10 outage they've sort of developed their lifestyle
11 around, you know I'm going to work for four to five
12 weeks here a lot. I'm not going to see my family at
13 all. I'm going to reap some monetary benefits, but
14 it's a very manageable section of life.

15 MEMBER RAY: No, I wasn't talking about
16 that.

17 MR. SMITH: Okay.

18 MEMBER RAY: I know you got some people
19 who will be subject to this relaxes requirement and
20 some who are not.

21 MR. SMITH: Absolutely.

22 MEMBER RAY: And the ones who are not
23 aren't going to be able to deal with --

24 MR. SMITH: We'll talk about that -- yes.
25 Whenever you treat a group of employees differently,

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 then that creates strife.

2 MEMBER RAY: Yes.

3 MR. SMITH: And really nothing good can
4 come from it.

5 Minimum days off is an averaging. So
6 their normal at power you're looking at one to six
7 week window that you're averaging. And during an
8 outage you're looking at either a one week or a 15-day
9 window that you're averaging.

10 So the way we were looking at while
11 working activities is multi-unit stations, virtually
12 everyone touches an outage activity during the outage.
13 So the way we were looking at it was if you're working
14 outage activities during that block that you're
15 averaging for minimum days off and during that time
16 period you are working on outage activities and
17 therefore, the outage minimum days off relaxation for
18 the outages apply to you in that block.

19 So in our mind most employees, if not all
20 employees at the site, are eligible for this allowance
21 for the minimum days off relaxations during outage.
22 And that is the way the NEI guidance is written.

23 Now the NEI guidance certainly specifies
24 if you're only assignment during the time period your
25 outage minimum days off relaxation is available, if

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 your only assignments are to the operating unit, then
2 certainly you don't apply because during the block you
3 were not working any outage activities.

4 So that's the nature and basis of the
5 industry position in the NEI guidance.

6 We did talk about the NRC guidance at
7 length. So they look at 59.54(m) for the one-and-one
8 and they also require a self-relieving for that one-
9 and-one. I think we've discussed that.

10 Industry guidance, our starting point was
11 that normally all workers at a multi-unit site perform
12 outage activities. All should be eligible. But we have
13 understood the intent and desire of the NRC staff to
14 have some of our operating personnel not allowed to
15 have this minimum days off relaxation. So we put in
16 the guidance to have the one RO that's required at the
17 control, it's one really one license. Could RO or SRO.
18 And then SRO that's required to be in the control room
19 and not be eligible for that outage relaxation.

20 And then our guidance further allows short
21 term relief, less than two hours from these at the
22 control positions and in the control room positions by
23 a licensed operator that is eligible for the outage
24 MDO relaxation. I think we had discussed that.

25 So why are we pursuing this? First of

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 all, we're not quite certain as to what problem this
2 outage exception for ROs and SROs is addressing. We
3 expect and believe that our licensed operators will be
4 fit for duty, alert and attentive to alarms whether
5 they're on the operating unit, on a unit that's not in
6 operation. When they're assigned a watch station,
7 they will be alert and attentive.

8 MEMBER BLEY: Can I ask you a question
9 about that?

10 MR. SMITH: Yes, please.

11 MEMBER BLEY: The previous slide and this
12 one together. Given that position that you argued
13 previously, and I'm not aware of the whole record,
14 that the requirements that exist for shutdown should
15 have been the requirements period?

16 MR. SMITH: I can't answer that question.
17 I my year we have not argued that. I don't know if we
18 ever went to that argument or not.

19 MEMBER BLEY: I guess the thing I'm having
20 trouble with is if when all the units are operating we
21 have a need from some point of view of safety --

22 MR. SMITH: Right.

23 MEMBER BLEY: -- to have the, I'll call
24 them normal now, the operating unit MDO requirements
25 why then is it reasonable to not have them when one of

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 the units is still operating?

2 MR. SMITH: Well, I think I can address
3 that. And I don't know the rule assigned back in
4 2007, and at least to my knowledge since then the
5 industry hasn't asked for the rule to be changed at
6 all. So the rule's --

7 MEMBER BLEY: I wouldn't have thought so.

8 MR. SMITH: -- specific on this 60 days.

9 MEMBER BLEY: But the rule isn't specific
10 about who that applies to.

11 MR. SMITH: Right. And that's the part
12 that we've been disagreeing with about what the
13 population.

14 Our position, yes, we've bought into the
15 cumulative fatigue. That if you work excess hours for
16 a long duration, that fatigue could impact your
17 performance. We believe the 60 day envelope around
18 the cumulative fatigue manages that.

19 So, I guess you would say yes we think
20 that 60 day, and we could have argued well why can't
21 we put that 60 days wherever we need it for management
22 of the plant. Both the rule and the people that are
23 getting the rule agree that cumulative fatigue can be
24 managed at higher work hours for a 60 day work period.
25 Why can't we manage where that 60 days? We may have

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 argued that.

2 MEMBER BLEY: I guess my understanding of
3 the research that deals with the cumulative is that
4 it's on the order of half a week to a week where those
5 effects begin to show up. So I'm not sure. But go
6 ahead, let's go on with the rest of it.

7 MR. SMITH: I certainly am not -- I have
8 very little, if any, expertise in the study of
9 cumulative fatigue other than have worked for a few
10 years.

11 So we're not aware of this fatigue issue
12 being a problem in our industry. We certainly haven't
13 been brought the examples of our licensed operators
14 are fatigue at stations. And this rule or the not
15 allowing them the 60 day relaxation is addressing a
16 clear and understandable problem. And it goes back to,
17 you know, we believe that 60 day envelop with manage
18 cumulative fatigue and staying within the other list
19 of barriers that I discussed earlier.

20 The rule prevents fatigue during normal
21 operation and outage operation. Probably "prevents"
22 is a poor word. "Manages" is the right word there.
23 You know, it gives us barriers that we can use to
24 manage the fatigue.

25 We talked about the third bullet at

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 length. This is one of the barriers in the rule. The
2 remainder of the rule does not give us any relaxation
3 during outage periods. So this one defense. Only
4 allows it for 60 days.

5 Now we get to the impacts. It will change
6 the way the industry performs outages. Industry has
7 come to the point where actually we perform outages
8 pretty well. We schedule and execute and very well
9 controlled in an efficient amount of time and get the
10 plants back in a safe manner. And we have a good
11 reliability record. I think for the last several years
12 the record shows we're doing outages quite well and
13 the reliability of our stations prove that.

14 So we're reluctant to change the way that
15 we've been successful in managing outages. And one of
16 those deals with what we do with operating crews
17 during outages.

18 The normal practice at a multi-station
19 site now, and even at a single unit site, is we go to
20 -- let's see, what do I want to call it? A super crew
21 I believe is the actual name. Super crew, larger
22 crews, less of them. You don't have the training
23 leaps. Now if it's a six week shift cycle, you
24 usually have a training week and work control week. If
25 it's a five week, you only have the training week. So

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 what we've done is got rid of the training week and
2 the work control week, come up with super crews. It's
3 a larger number of people, all of them either on a
4 straight day shift through the outage or a straight
5 night shift through the outage. And that way we can
6 make efficient use of our licensed operator resources
7 during the outage.

8 MEMBER BLEY: That's not in the guidance
9 that you --

10 MR. SMITH: Absolutely not. Absolutely
11 not. This is just --

12 MEMBER BLEY: The way it's being done.

13 MR. SMITH: The way it's being done that
14 having part of our control room now on different hours
15 than the other part, we're going to have to rethink
16 our super crew line up. We certainly can't put
17 everybody into four super crews. We're going to have
18 to have, maybe, all four super crews and another shift
19 cycle or something going on for the operating unit.

20 It's a change in the way we are going to
21 perform outages, have been performing outages. We're
22 not eager to change a successful approach that we
23 don't believe is required by the rule. And certainly
24 don't see the added benefit that that interpretation
25 is going to show us.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 Unnecessary resource and labor issues.
2 When we go to these super crews, I've heard various
3 estimates from the industry of how many operating
4 licenses this is going to impact. At the minimum I've
5 four super crews and then four. So that'll be two
6 SRO, two ROs per shift times four. So that's 16
7 licensed personnel that it's going to impact And
8 that's if you don't an extra license or two over there
9 just in case someone has an issue during the outage.

10 MEMBER RAY: Now this only applies to
11 licensed personnel?

12 MR. SMITH: Only to licensed, correct.

13 MEMBER RAY: This problem that we're
14 talking about now?

15 MR. SMITH: Yes. The exception only
16 applies to licensed control staff. Yes, sir.

17 MEMBER RAY: But everybody else who is
18 effected by the rule during an outage can work as a
19 single outage crew? Just the licensed operators on
20 the operating unit?

21 MR. SMITH: That is correct. That is
22 correct.

23 So we're going to create a situation where
24 some operators are working more overtime during the
25 outage than the other operators. And, of course, that

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 will roll right back into when we're back at normal
2 operating hours that those people that got to work
3 less during the outage, get to work more than the non-
4 outage. That's just a fact of life that that's going
5 to happen. You've got limited amount of resources, X
6 number of hours to distribute amongst them and that's
7 going to cause some issues with our control room
8 staff, our control room team work. And treating
9 people differently has never been a popular thing to
10 do.

11 MEMBER BLEY: It went by me a little fast.

12 MR. SMITH: Yes. Sure.

13 MEMBER BLEY: The way you're doing it with
14 the super crews, each shift is how long and it's not
15 rotating?

16 MR. SMITH: Twelve hours.

17 MEMBER BLEY: So twelve and twelve?

18 MR. SMITH: Yes, sir.

19 MEMBER BLEY: Okay. But you've got four
20 super crews?

21 MR. SMITH: Yes. You usually have two
22 assigned to nights, two assigned to days and you're in
23 some sort of -- I don't know what Calloway does. Ours
24 was five/one, five/one which we can't do anymore
25 because of the outage minimum days off. But at

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 Comanche Peak, we're going to five/one, four/two. And
2 then people have different days off every day of the
3 week. So you combine those crews together and--

4 MEMBER BLEY: When you're not on the 12/12
5 shift, you're supporting the outage some of that time?

6 MR. SMITH: Not on the 12/12 shift.

7 MEMBER BLEY: I mean you got four crews
8 who --

9 MR. SMITH: Right. Oh, the people that are
10 operating?

11 MEMBER BLEY: Yes, the super crews.

12 MR. SMITH: There's a couple of ways
13 industry deals with that. One of our larger fleets
14 actually remains at a rotation through the outage.

15 MEMBER BLEY: Yes.

16 MR. SMITH: So our normal practice at
17 multi-unit sites their licensed -- this is not ANO
18 where they have different designs and it's not
19 Salem/Hope Creek. But our normal is your licensed
20 operator has a license on each of the plants. And
21 normal practice is to shift cycle -- not even a shift
22 cycle. A night and day on this unit and then it
23 rotates to a night and day on the other unit.

24 MEMBER BLEY: Yes.

25 MR. SMITH: That way they're never siloed

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 into just knowing what's happening on one unit.

2 MEMBER BLEY: Okay.

3 MR. SMITH: One of our larger fleet does
4 that with their operators even during an outage. Now
5 that's not what I'm used to. What I'm used to is we
6 have the five/one five/one. So the ROs and the SROs
7 are consistent. But on the days that they're not RO
8 or SRO they're over working the outage.

9 MEMBER BLEY: That's what I was thinking.
10 But anyway, I'm just curious. You know, it seems to
11 me there's one advantage of this plan from the
12 standpoint of the effect on people, and that is not
13 rolling the shift around. Was this ever proposed in
14 discussions as an alternative to the way the
15 Regulatory Guide is right now? Including the
16 commitment to keep people on the --

17 MR. SMITH: Well, I can't say if that was
18 proposed or not.

19 MEMBER BLEY: I was just curious.

20 MR. SMITH: I don't believe it was.

21 MEMBER BLEY: Okay.

22 MR. SMITH: I know in my year we've not
23 talked that much about actual outage implementation.
24 We're really as an industry just getting to put those
25 outage schedules together and run through them this

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 spring. So we'll know a lot more about the impacts.
2 But I can say one of the early impacts we see is the
3 way we've done super crews and ops is difficult more.
4 Difficult, at best.

5 MEMBER BLEY: Will be more difficult?

6 MR. SMITH: More difficult, that's a good
7 way of putting it.

8 MEMBER BLEY: Okay. Go ahead. It's
9 interesting.

10 MR. SMITH: Other questions? These are my
11 only two slides. NEI is continuing to pursue this
12 with the staff. It is a draft final Regulatory Guide,
13 so we would like to see staff change their position on
14 this exception and we will continue to communicate
15 with the staff to that end.

16 MEMBER RAY: Just to be clear. Your
17 objective would be that anytime on a multi-unit site
18 that one of the unit is in outage, then the --

19 MEMBER SHACK: Relaxation.

20 MEMBER RAY: Yes. I hate to use that word
21 "relaxation" because it sounds peculiar to me.

22 But anyway, the reduction in minimum days
23 off requirement, I guess, right? Few minimum days?

24 MR. SMITH: Right.

25 MEMBER RAY: Fewer days off would apply to

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 everybody?

2 MR. SMITH: No. Our position now is that
3 we limit it to one reactor operator, the person at the
4 controls, and one senior reactor operator.

5 MEMBER RAY: You're still going to have
6 the same problem, though.

7 MR. SMITH: Still the same problem, just a
8 lesser degree.

9 MEMBER RAY: Right. But your reason for
10 that position is one that's based, I assume, on the
11 practicalities of getting the job done as opposed to
12 something that is motivated by well it really is
13 important that these people continue to have the
14 higher number of days off as a requirement?

15 MR. SMITH: I think your statement is
16 correct. Our going to that one-and-one is based on we
17 believe that was agreeable in the staff position
18 Regulatory Guide, and therefore we placed it in our
19 guidance.

20 MEMBER RAY: Okay. But it doesn't
21 eliminate the problem that --

22 MR. SMITH: It does not eliminate it. It
23 just minimizes the impact area.

24 Worker's schedule. There's a rule
25 definition for what a shift schedule. It talks about

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 one for 8/10 and 12. We saw them earlier when Val did
2 her presentations. I'm not going to reread that to
3 you again.

4 Industry guidance that we needed was how
5 do you work overtime into this shift schedule. So that
6 was what we started working on. And the reason the
7 NEI guidance came up with this term called periodic
8 overtime and addressed that.

9 Staff position and the industry positions
10 are clear and understandable. Staff position is the
11 schedule is defined by the actual hours worked by the
12 workers. So it would be an average that continues
13 through the shift cycle.

14 Industry position is the schedule is
15 determined by the station and is set, and that will
16 set the minimum days off requirements for the worker.

17 So those are the two positions.

18 This one, the reason or impact on this is
19 a couple. This rule is complex and this adds what we
20 believe is unnecessary complexity. We don't believe
21 that the rule language has any language in it that
22 requires us to use actual hours worked by a worker in
23 determination of the worker's schedule.

24 So we put a couple of -- actually just one
25 example of a complexity in the changes that it occurs.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 So if you have an eight-hour a day worker working a
2 six week shift cycle, and remember we include lunch
3 for these eight-hour person, so they're really working
4 a 8.5-hour a day schedule. If a worker works as little
5 as 16 hours' overtime in that period, they could have
6 a shift change. So can you think of a maintenance
7 supervisor that in a six week period doesn't work 16
8 hours of overtime? I don't know of many. There might
9 be one or two out there.

10 So it's pretty certain, and we heard this
11 in our workshop last week, that your supervisors are
12 going to be working a different schedule than the
13 workers that they supervise under this determination.

14 It can actually -- if I say I'm a
15 maintenance supervisor that have ten employees out
16 there working, and of course they're working different
17 jobs, I could actually end up a shift cycle where I've
18 got people on 8/10 and 12-hour work schedule. And that
19 could change as we rotate through the shift cycle. It
20 could up to ten at one point three weeks in the middle
21 of the shift cycle. And then the person takes two days
22 of vacation that I didn't know about, and they could
23 come back down to an eight-hour shift rotation.

24 So if you put actual work hours into this
25 and then you've got vacation, and then you've got

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 personal time, sick time; all the things that we all
2 know happen out there everyday every week at an
3 operating facility all that will impact what the shift
4 schedule is. That supervisor is going to have to be
5 able to sit down at his desk whenever he is going to
6 assign overtime and project what this employee is
7 working in the future and then look back at what that
8 employee is working in the past. Put the hours of
9 overtime that they want them to work into the software
10 routine and that will figure out what shift cycle that
11 employee is likely to be on through the remainder of
12 that cycle.

13 Now the other item that we don't
14 particularly enjoy about this is if you're doing block
15 six weeks, the magnitude of impact and complexity is
16 really a matter of luck when that emergent activity
17 hits. If you're in the first week of your six week
18 cycle and your pump breaks and you got to work the
19 crew a little extended hours to get that pump back,
20 well, you've got five more weeks to work that out,
21 right? But if happens in week six where you've got
22 five weeks of history and your shift cycle ends on
23 Saturday, nothing you can do about that. Then you're
24 probably going to have to waiver that work group to
25 get them to work the same hours that back in week one

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 you wouldn't waiver them at all.

2 And it shouldn't be, we shouldn't have a
3 rule that depends on luck as to when something occurs
4 as to --

5 MEMBER BLEY: So you can't use a rolling
6 average --

7 MR. SMITH: No.

8 MEMBER BLEY: -- where you're using a
9 fixed--

10 MR. SMITH: You can use a rolling.
11 Absolutely you can. In fact, we're --

12 MEMBER BLEY: Doesn't that take care of
13 the problem you just described?

14 MR. SMITH: Actually, it makes it a
15 continual problem that every time you have emergent
16 activity and work them extra hours, then you have to
17 hold your breathe for the next five weeks and six days
18 until that rolls out. Because you're always
19 susceptible to the next one occurring. It just adds
20 complexity. It's not what we want our first line
21 supervisor concentrating on. You know, we'd like to
22 go back to what the intent of the rule is that's to
23 give us ways of managing fatigue. It is a manageable
24 set of rules. We think in this instance that a
25 complexity that the staff has suggesting just doesn't

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 bear out in value added for the fatigue management.
2 And a lot of it is that last bullet. This is a
3 significant distraction for first line supervisors
4 that they have a rolling calculation for the minimum
5 days of their workers.

6 We heard last in a presentation on the
7 maintenance we had, I believe, it was a First Energy
8 presenter that they've looked at this and their
9 recommended action that First Energy is going to do is
10 they're going to split their maintenance supervisor.
11 So they'll have a maintenance supervisor assigned to
12 probably a double crew so you don't increase
13 supervisors. But they'll overlap in the middle of the
14 week, and that way you've got at least some
15 consistency of supervisor in case you have to work
16 extended hours without a waiver.

17 Remember, waivers are difficult. Now
18 waivers you have to have a condition adverse to
19 safety, signed by the shift manager that you have to
20 have work hours extensions to correct that situation
21 adverse to safety. And in addition to just getting
22 the door, then you have the fatigue assessment that
23 your supervisor is going to do to ensure that that
24 worker's -- a waiver is the not the way that we wanted
25 to go on emergent work.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MEMBER BLEY: And just going back to
2 saying that the assigned schedule that determines the
3 schedule gets you out of this problem?

4 MR. SMITH: Yes, but we don't have any
5 floating minimum days off. If you're working an hour-
6 hour shift schedule, you're required one minimum day
7 off average per week, and it won't change.

8 CHAIR STETKAR: Even if you work 12 hours
9 over that entire time?

10 MR. SMITH: That is correct. Even if you
11 work 12 hours over that entire time.

12 CHAIR STETKAR: By definition it's called
13 an eight-hour schedule?

14 MR. SMITH: That is correct.

15 CHAIR STETKAR: I got it.

16 MR. SMITH: Now there is some safeguards
17 about the situation you're discussing, and that is a
18 major concern of the staff, of the NEI in our guidance
19 is that if by the NEI guidance a person could work an
20 8-hour shift schedule but have it 72 hours a week
21 forever. I mean, and I got a truth.

22 CHAIR STETKAR: It's true.

23 MR. SMITH: Truth. However, every time
24 this is in the rule, the rule requires a review of
25 worker's performance anytime the worker averages more

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 than 54 hours in a shift cycle.

2 CHAIR STETKAR: Is it the rule or the NEI
3 guidance?

4 MR. SMITH: The rule. The rule requires
5 that. So it's a rule statement. So every time -- now
6 with the NEI guidance has taken that forward -- and
7 you can correct me if I'm wrong, Dave. But the rule
8 requires an annual review of any worker that's
9 exceeded a 54-hour average in a shift cycle. So that's
10 the rule statement. Annually you'll look at that.
11 But the NEI guidance has further defined that to make
12 what we think this to be acceptable is. We will look
13 at that 54 hour review on a quarterly basis. And if we
14 exceed it, we put it in our corrective program and
15 determine if it's the appropriate and if it's
16 impacting working performance.

17 So in our mind, and I know you guys know
18 about our corrective action programs in plants, and
19 you certainly know about P&IR inspections at the
20 plant. We are not going to be able to, I guess, keep
21 working people 72 hours because of staffing shortages
22 at plants when it's in our corrective action program.

23 Just not going to happen. It's certainly transparent
24 to the NRC that every quarter we'll put it in the
25 corrective action program. Certainly available to the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 residents to review on a daily basis. Certainly
2 available to them under an inspection program under
3 the -- I think it's every two year or maybe every
4 three year P&IR inspection.

5 We believe that's more than sufficient
6 safeguards in managing fatigue. And keeps us out of
7 the issue of a rolling minimum days off. But it's a
8 good question and observation, certainly what you say
9 about 72 hours forever is a true statement.

10 Your thoughts or comments on that?

11 Summary. Hey, with one minute left.

12 It is a complex rule. We've got some
13 software that's going to help us out in that way.

14 I wanted you to understand we're not just
15 sitting here waiting on October 1st. We've made
16 significant progress in implementation of the rule.
17 We're going to do a couple of pilots in the spring,
18 learn from those. We will successfully implement this
19 rule, there is no doubt about that.

20 We believe NEI 06-11 Rev. 1 provides
21 guidance that meets all rule requirements. We don't
22 agree that there are requirements in NEI 06-11 Rev. 1
23 that are in contraction to any rule requirements. And
24 we feel that exceptions to the Rev. 1 are not
25 necessary.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 So with that, I'll take any more
2 questions.

3 MEMBER BLEY: You mentioned that these
4 things can cause you to roll people from out of
5 shifts. Somewhere along the line there --

6 MR. SMITH: Okay.

7 MEMBER BLEY: -- you talked about that as
8 people accumulates some hours, the supervisor might
9 get rolled into a different shift or --

10 MR. SMITH: Different schedule. Different
11 schedule.

12 MEMBER BLEY: A different schedule.

13 MR. SMITH: Right.

14 MEMBER BLEY: But not onto a different
15 crew?

16 MR. SMITH: No.

17 MEMBER BLEY: All right.

18 MR. SMITH: What would happen or what we
19 see happening, and of course all this we're trying to
20 look at it --

21 MEMBER BLEY: I found it got a little
22 complex, but I understand.

23 MR. SMITH: Your normal maintenance
24 supervisor probably comes in a half hour early before
25 the crew gets there to get the work packages. They

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 probably work through lunch, that's probably right to
2 include their lunch. They're also probably there a
3 half an hour after the work crew heads out just
4 closing out things and getting ready for the next
5 morning.

6 So what we see happening with the
7 averaging is that that supervisor will push over his
8 nine or ten -- nine or 11 depending whether he's an
9 eight or ten.

10 MEMBER BLEY: Yes.

11 MR. SMITH: Therefore, putting him in a
12 different schedule requiring more minimum days off.
13 So if you need an emergent activity on a Saturday or a
14 Sunday, or whatever their normal day off is and
15 unfortunately equipment doesn't pick just our normal
16 days off to break, for that supervisor to come
17 supervise his or her crew would require a waiver,
18 which would require it to be an adverse condition to
19 safety.

20 Now we don't think that that's an
21 appropriate waiver for an item. We think the method
22 NEI has has the right safeguards to ensure supervisors
23 are not working extended hours and it gives us the
24 ability to bring that supervisor for continuity in
25 with their own crew.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MEMBER BLEY: I only have to say, I've
2 seen another industry where something similar, but to
3 get the equivalent of a waiver you had to declare an
4 emergency. And you see emergencies declared for things
5 that would be hard to justify.

6 MR. SMITH: We certainly are not endorsing
7 going there. We're endorsing, just me speaking I
8 believe the use or misuse of waivers is probably a
9 reason we got to where we are. We certainly aren't
10 going to endorse misusing them under this rule. So
11 we've learned that lesson and trying to stick with
12 waivers being truly needed for security or safety.

13 CHAIR STETKAR: All right. Anybody else?
14 Members?

15 MR. SMITH: Thank you very much.

16 CHAIR STETKAR: Thank you, Russell.

17 And I guess we have a presentation from
18 Robert Meyers.

19 MR. TAGGART: No. Actually it's going to
20 be Mitch Taggart.

21 CHAIR STETKAR: Or Mr. Taggart.

22 MR. TAGGART: I guess. But I'm going to
23 be Bob. I'm sure he doesn't want to be me.

24 I am Mitch Taggart. I'm a license operator
25 currently at Calloway and was previously licensed at

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 Sequoia. So I've had some experience both with the
2 single unit and multiple unit.

3 And for PROS, we wanted to raise two
4 issues with the Regulatory Guide, and it's concerning
5 definitions.

6 The first would be -- I apologize I don't
7 have a handout. We were working via email and
8 telephone, and this is what I got. You don't want to
9 see the copy I got.

10 CHAIR STETKAR: You're on the transcript.

11 MR. TAGGART: The first concern is with
12 unit outage. And the unit outage, the definition
13 currently is a reactor unit disconnected from the
14 grid, and we've talked about that already.

15 And PROS recommended change would be
16 period covering up to one week prior to disconnecting
17 the reactor from the grid, and up to 75 percent power
18 following the reconnection to the grid.

19 Although some groups for outages falls
20 between -- or their work falls between an open breaker
21 and closed breaker this is not true for operations.
22 In a period just before shutting the plant many
23 activities occur that require additional personnel.
24 Among those include rotating to the non-shift schedule
25 going onto the outage schedule. Just in the time

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 frame that we do with the control room staff in the
2 simulator. And finally just preparing for the work
3 getting the thing staged so we can prepare the plant
4 for maintenance crews.

5 And many stations start their super crews,
6 as we already mentioned, out of schedule one week
7 prior to the shutdown. And advantages for that
8 change, proposed change, it allows the crew
9 acclamation to the outage schedule shift prior to the
10 shutdown, even going on straight days or nights.

11 Crew familiarization with each other.
12 Because now they're the super crew, they're a
13 different crew. And personalities impact how crews
14 operate.

15 Allow transition period from the normal
16 shift rotation to the outage rotation, and that just
17 allows us to accommodate the individuals going from
18 day to nights to nights to days. It takes a few days
19 to be able to transition somebody to a different
20 schedule.

21 Adequate staffing for the preparation.
22 And what currently is happening, at least the two
23 sites I'm involved with and Russell can probably back
24 this up, crews are actually doing real time shutdowns
25 at the plant in the simulator. They turn over to each

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 other and they take it to a condition where it's a --
2 basically turn it over to a maintenance individual.
3 And that has turned out to be extremely valuable. And
4 without that ability to have the additional people to
5 cover those times when the people are in the
6 simulator, we couldn't do that.

7 Now sufficient personnel to be able to
8 pre-stage the equipment and get the worker protection
9 pre-staged. That's extremely time consuming and
10 allows us to do in a more controlled manner.

11 Better preparation time including pre-job
12 briefs prior to the outage. Once work has started it's
13 very difficult to get the individuals that are
14 involved in the work activity, especially when other
15 work groups are involved all in one place when they're
16 not having something else on their mind or something
17 else on their schedule.

18 Outage preparations do not need to be done
19 by the personnel in the control room. Without the
20 additional preparation time, many of those activities
21 would fall back onto potentially some of the people in
22 the control room.

23 And being prepared for the outage helps
24 stress levels. Stress is a major impact with fatigue
25 and if you're not prepared, stress goes up for

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 yourself and for the people that manage you. And when
2 their stress goes up, the fatigue level goes up.

3 And this additional preparation time
4 reduces the chance of errors and subsequent events
5 improving overall safety.

6 Some advantages for the outage recovery
7 time that we mentioned. Allow all equipment to be
8 tested placed in service prior to releasing the
9 support personnel. If you've ever been involved with
10 an outage, there is something that will not come up
11 the way you desire it and you have additional
12 personnel to assist to recover that.

13 Ensure sufficient personnel available to
14 handle to given emergent issues. It can occur for an
15 outage a large number of activities for operations are
16 not prior breaker closed. Most of them are actually
17 after breaker closure. And a lot of transition again
18 from the outage schedule to the normal shift schedule.

19 And the better we can plan or recover from
20 an outage, resolve those issues that will come, the
21 fewer challenges during the cycle online.

22 And I want to make it very clear that PROS
23 is not proposing any change to the allowed 60 days and
24 for the work modification schedule. That's one week
25 prior to, that we mentioned, would be included in that

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 60 days if the utility so chooses to use it.

2 And an individual in our organization had
3 an experience where their site chose not to implement
4 the super crew philosophy one week prior. They
5 implemented the day of breaker opening. And the
6 challenges and the time consumed to get to cold
7 condition and the turning over the equipment to
8 maintenance drastically increased both the time and
9 also the stress level associated with getting to that
10 condition and did not result in any errors, but
11 definitely made the error possibility rise.

12 An analogy, you can just sum up the idea.

13 Is you can equate getting ready for an outage much
14 like preparing for a Broadway production. Months or
15 even years go into it preparing. The dress rehearsal
16 is just before. And likewise, coming out after opening
17 night if there's something wrong with that production,
18 the team doesn't wait for a few weeks to fix the
19 problem. They fix it that night so the rest of the
20 productions are successful. And, again, coming out of
21 an outage the same: We want to make that long run
22 following an outage.

23 Any questions on those comments.

24 MEMBER BLEY: Yes. Mitch, two things.

25 MR. TAGGART: Yes, sir.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MEMBER BLEY: One is I wish we had your
2 stuff your in writing because it will be weeks before
3 the transcript comes back.

4 CHAIR STETKAR: And we're supposed to
5 write a letter this week.

6 MEMBER BLEY: And we're supposed to write
7 a letter.

8 MEMBER BLEY: So that's troublesome for
9 us. The other thing is wouldn't it require a rule
10 change in that you're wanting to change the definition
11 of when the outage starts, and that says when you
12 disconnect from the grid. It seems like that it would
13 require a rule change no matter how --

14 MR. TAGGART: I think the --

15 MR. SMITH: I can answer for Mitch on this
16 one. But it is defined in the rule, unfortunately, so
17 it would require a rule change. And it is something
18 that I believe NUREG or the Regulatory Guide got a
19 couple of comments from, and one of the trade
20 divisions also asked for a two week before. Certainly
21 I went back. I have seen in history wasn't there, but
22 I believe prior to the rule coming out that NEI did
23 ask on the industry's behalf to allow that 60 days to
24 be managed by the industry, not set by a set of
25 breakers open and closed. The rule came out the way

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 the rule did. It's one of those islands that --

2 MEMBER BLEY: Or you could set it early
3 and have extra days off in there or something that or
4 something, but that would just be part of this, I
5 think.

6 MR. SMITH: That would not be good for
7 nuclear power.

8 MR. TAGGART: Okay. And any other
9 questions? I understand the exception to the rule
10 change, and that's not what we're here discussing.

11 Now the second concern is also with the
12 outage unit that we've talked some about. Currently
13 we're defining the outage unit as the outage that's
14 under the condition of an outage for this site. And
15 it proposes that the definition or the description
16 would include all site personnel. And that while
17 distinguishing between personnel working on the outage
18 and non-outage unit for hourly limitations may seem
19 reasonable, in many circumstances it would be
20 impractical if not impossible, particularly in shared
21 control room. The unattended consequence of this
22 requirement are significant and may impact overall
23 safety.

24 And advantages to what we are
25 recommending. The site can manage work hours using a

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 single rule, as Russell was mentioning. It would not
2 result in most junior people being forced either to be
3 on the outage or non-outage unit, depending on
4 seniority; that's how it would be determined and
5 hence, the strife that would occur there.

6 Personnel working the outage will be
7 limited since more licensing will be required for the
8 operating unit. To be able to maintain a non-outage
9 schedule, it will require more operators. Those
10 operators will come from the outage personnel. So that
11 will mean more outage activities for fewer people.
12 And, as you can imagine, less preparation and
13 possibility less safe.

14 And critical outage activities have less
15 oversight and possibly more personnel performing. And
16 what I'm saying there is the fact that you have fewer
17 people doing these activities during an outage, the
18 outage activities themselves are not less safe or less
19 critical. As a matter of fact, I think outage
20 activities have a tendency to be more critical.
21 Examples would be mid-look, safeguards equipment
22 testing, and movement of irradiated fuel. And to have
23 fewer people performing those activities would not
24 present the best condition for safety.

25 And fatigue levels may be higher for

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 operating units compared to outage units for short
2 duration outages. And what I'm saying there is the
3 fatigue level for a crew that is rotating shift, which
4 I do, can be less -- or I mean more just the fact that
5 they're rotating compared to somebody that's straight
6 nights or straight days. The circadian cycle for
7 somebody rotating is interrupted more often if that
8 person is rotating compared to somebody that's working
9 a straight day and straight night.

10 And the short durations of our schedules
11 are presently being maintained to straight nights and
12 straight day schedule to get through the work load
13 are, in my opinion, better for fatigue. I have less
14 fatigue on a straight schedule than I do on a
15 rotating.

16 And, again, you go back to the analogy of
17 the Broadway production. If you have everybody on a
18 different schedule, the production team, the actors,
19 the producers, they don't see the whole aspect. They
20 miss parts of it. And similarly, you would have -- you
21 may not have a production at all if you don't have
22 sufficient communication.

23 And the same as with an outage. If you
24 have people on different schedules including the
25 outage to non-outage personnel, the communications are

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 going to suffer. And without good communications, the
2 stress level goes up, the fatigue goes up. And often
3 with lack of communication or poor communications a
4 higher stress level; that's when the error rate has a
5 tendency to rise.

6 MEMBER BLEY: Given the way you just put
7 that last round, would your organization be happy if
8 the Regulatory Guide instead of sitting the way it is,
9 required that during the outage you went onto straight
10 shifts with no rotation as kind of a compensation for
11 the rocking the days off?

12 MR. TAGGART: We would like the
13 flexibility and we have no issue with the three days
14 given for operators on a 15 day cycle. We can manage
15 that. Most crews or most sites already do that. They
16 implement that in their schedule. But we'd like the
17 flexibility to be able to put all personnel on a
18 straight schedule to support the outage.

19 Now, I strictly speak of a multi-unit site
20 that has a combined control room since there is a
21 demarcation that you can't have the other crew
22 impacted in not a similar site.

23 CHAIR STETKAR: I'm scribbling because I
24 have to write a letter. I want to make sure, because
25 my memory is pathetic.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. TAGGART: If I can get an email
2 contact, I will get this information to you
3 electronically.

4 MEMBER BLEY: Is that legitimate?

5 CHAIR STETKAR: I don't know if that's
6 legitimate.

7 MR. TAGGART: All right. We'll talk after
8 the meeting.

9 CHAIR STETKAR: Harold, if we can get
10 something together, it would help.

11 Only because a lot of times, if you're not
12 familiar, in many cases we have these Subcommittee
13 meetings a month or two in advance of the time when
14 we've been requested to actually write a letter. In
15 this case it's, I think, three days or two days. So we
16 don't have the luxury of having transcripts that we
17 can go back to and refer to.

18 MR. TAGGART: Almost an outage schedule.

19 CHAIR STETKAR: In real time, if that can
20 happen. I'd certainly appreciate that.

21 Anything else? Any other questions,
22 comments from Committee members? Notable silence.

23 Is there anybody else? We're now rapidly
24 approaching the end of our agenda here.

25 MEMBER RAY: You sound disappointed.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 CHAIR STETKAR: No, not at all.

2 Anybody else?

3 MR. BROWN: If you're going to give me the
4 option, I will just take a quick second to close the
5 loop on something Russell said and make sure that we
6 leave a complete picture of the flexibility in the
7 rule.

8 This is Fred Brown in NRR.

9 With respect to the example of a
10 maintenance supervisor who gets called in on a
11 Saturday and has to work extra hours and what the
12 impact of that is, Russell gave two options. One is a
13 waiver, which is an option if it's appropriate. And
14 the other is to move the supervisor totally off of
15 sequence of what his crew is on. And there's actually
16 two other options that are available to a license
17 within the rule.

18 The first of the additional options is to
19 have him take Monday off. You know, the rule doesn't
20 specify where the day is. So resident inspectors for
21 the agency work first 40 shifts as a normal routine,
22 it doesn't matter when the 40 is. It might be
23 Saturday through Wednesday based on activities at the
24 plant. In this case, a Monday off or a Tuesday off
25 with somebody else covering the supervisory function

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 then puts the supervisor back into the same shift
2 cohort as his staff.

3 The other option is in the case where
4 something occurs at the end of the cycle, which
5 Russell pointed is a problem, the six week period is
6 an option not a mandate. So a licensee has the
7 flexibility under the rule to terminate the period up
8 to that time under which people were working, whether
9 it's an eight-hour schedule or a ten-hour schedule or
10 a 12-hour schedule and start a schedule.

11 So going back to his example, you know he
12 said if a perturbation in the work cycle occurs early,
13 you have lots of time to average it out. If it occurs
14 late, it may put you in the place where you need a
15 waiver. And not that this is a desirable feature of a
16 rule that you have to do a lot of the calculations,
17 but the rule does allow you to stop and put the
18 perturbation into the front end of a new six week
19 cycle or four cycle or two week cycle. So you can
20 manage it that way.

21 CHAIR STETKAR: But that last alternative
22 involves the licensee essentially on paper redefining
23 that work cycle for the purposes of tracking people?

24 MR. BROWN: Right. Exactly.

25 CHAIR STETKAR: Okay.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. SMITH: I would have to check on that
2 that we can terminate the shift cycle whenever we felt
3 the need. Didn't believe the rule allowed us to do
4 that. But if you're allowing us to do that, I'd
5 certainly like to get it in our guidance because right
6 now it says our shift cycle be a continuous repeating
7 shift cycle and to end it whenever wouldn't fit that
8 definition.

9 MR. BROWN: You could restart it every
10 week.

11 CHAIR STETKAR: You could come up and
12 identify yourself and speak with sufficient clarity to
13 -- whatever it says.

14 MR. DESAULNIERS: David Desaulniers
15 speaking.

16 I believe Fred characterized correctly is
17 that there could be an option to start a new shift
18 cycle where you recognize that the individuals are now
19 transitioned to a longer shift duration or to be able
20 to complete the work in a timely manner as long as the
21 minimum days off are given appropriate to that new
22 cycle.

23 CHAIR STETKAR: And there's no limit on
24 how frequently one can do that?

25 MR. BROWN: Good question.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 CHAIR STETKAR: I mean, as long as you
2 meet all of the --

3 MR. DESAULNIERS: Minimum day off
4 requirements.

5 CHAIR STETKAR: -- complete the goals for
6 minimum days off in, what we call, a short time
7 window, you know one day off that --

8 MR. DESAULNIERS: I think on a practical
9 perspective it's something that wouldn't be, you know,
10 desirable as a routine.

11 CHAIR STETKAR: No.

12 MR. DESAULNIERS: But as a means to
13 address an emergent work situation in that
14 circumstance.

15 The other point I wanted to add in this
16 regards to getting caught on the week five or
17 whatever, or one of the latter weeks in the shift
18 cycle as the minimum days off requirements were set
19 at a level that allowed a certain number of additional
20 hours per week. And so the assumption there is not
21 only, to be clear, that you're having emergent work
22 come at the latter part of the shift cycle, but that
23 you've also burned all of your extra days earlier in
24 that shift cycle as well. And that has to be
25 recognized as part of the assumption of that scenario.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 CHAIR STETKAR: That's because if you're
2 working a nominal eight-hour shift, you can run up to
3 8.99 hours per day without any exception?

4 MR. DESAULNIERS: Right. The eight-hour
5 shift cycle only requires one day off, so there's a
6 built in extra day of work in every week that would
7 assume that you've used all those extra days each week
8 going into it and you have nothing left in the tank to
9 get you through the --

10 CHAIR STETKAR: That's right. It's not
11 only 8.99 hours per day a week, we tend to think of
12 five day work weeks. But it's an 8.99 hours per day
13 over a six day work week.

14 MR. SMITH: Just as long as we realize
15 it's a nominal 8.5

16 MR. DESAULNIERS: If I might, I'd like to
17 add just a point of clarification on some of the other
18 comments that were raised here by NEI and PROS just
19 for, perhaps I'm own clarification.

20 There seemed to me an assumption that I
21 believe in your presentation that you would not be
22 allowed to go onto a fixed shift cycle if you were
23 required to stay on the operating days off
24 requirements? And there's nowhere in the rule in the
25 Regulatory Guide where we specify that once you go

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 into an outage that you have to go fixed day or, you
2 know, you can't go on rotating or 00

3 CHAIR STETKAR: Yes. It almost sounds like
4 from the discussion we were having ten minutes ago
5 that the licensee could essentially for the duration
6 of the outage redefine their shift schedule, right?

7 MR. DESAULNIERS: You can redefine your
8 shift schedule --

9 CHAIR STETKAR: Because that's allowed
10 under the rule and under the Regulatory Guide.

11 MR. DESAULNIERS: -- when you go into the
12 outage. As we anticipated, there would be crews going
13 into a super crew configuration. So they'll be
14 changing their shift cycle for the outage duration.
15 And based on the requirements for operators, we would
16 expect that it would probably be a four days on, one
17 day off cycle. But that's not required. And there
18 are flexibilities there that you could rotating, if
19 that was the desire, or go to fixed as the super crew
20 does. Just so that we're clear on that. We're not
21 requiring that. I don't know if there's a practical
22 consideration that you're suggesting that way with
23 that.

24 MR. SMITH: I don't think we're suggesting
25 that, at least I didn't hear that. What we said was

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 they'd be different.

2 MR. DESAULNIERS: Okay.

3 MR. SMITH: You can't do the 4/1 on both
4 sides. There's going to be a different shift schedule
5 for the outage and the normal. We didn't mean to
6 insinuate that one would be fixed and one would be
7 rotating.

8 MR. DESAULNIERS: Okay.

9 MR. TAGGART: Correct.

10 MR. SMITH: You'd certainly have the
11 flexibility, it's just different.

12 MR. DESAULNIERS: That's one thing.

13 The other, similarly, there's nothing,
14 again unless there's practical considerations because
15 of the flexibility and the minimum days off during
16 operations being averaged over a six week cycle that
17 you couldn't go into a super crew configuration while
18 you still have the minimum day off requirements for
19 the operating.

20 So you could go prior to an outage go into
21 a super crew configuration.

22 MR. TAGGART: I've actually had that
23 proposed.

24 This is Mitch Taggart again.

25 Actually had it proposed by someone at the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 site. And the problem with that is you have to assume
2 no overtime in the four to five week prior to without
3 having to write a corrective action every single time
4 you go into a outage with basically no resolution
5 other than the fact that you're going to say that
6 you're going to do it again, which is again putting
7 the sites in a bad situation. Unless you have no
8 overtime prior to that week going into an outage, you
9 cannot do that with exceeding the 54 hours average for
10 that week.

11 MR. DESAULNIERS: So by going into a 72
12 hour work week, the last week you're saying you have
13 no additional flexibility in the prior five weeks?

14 MR. TAGGART: Not the way we rotate,
15 that's correct.

16 MR. DESAULNIERS: I guess that's some math
17 I would have to go back in and get out the shift
18 schedule to make that determination. That surprises
19 me.

20 So I'll take it at your word and that
21 you've figured that out, and I just want to be clear
22 that it's prohibited by the rule --

23 MR. TAGGART: Correct.

24 MR. DESAULNIERS: -- in terms of direct
25 language or guidance.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. SMITH: Okay. We as a utility, and we
2 ask for some outage shift schedules and transitions to
3 be brought to our workshop. We aren't there yet. No
4 one's cracked that egg yet. And we're not certain how
5 we're going to get into or out of these, other than
6 we're certain it's going to be much more difficult
7 than it was in the past.

8 So we hope what we suspect after our
9 pilots this spring we'll have some suggested ways to
10 transition into and out of an outage in a good manner.

11 Transitions are very difficult under the rule.

12 CHAIR STETKAR: Anything else?

13 I guess what we normally do is like to go
14 around the table among the Committee members who are
15 here and see if there are any remaining questions,
16 open issues, comments.

17 MR. BROWN: Beyond what we've already
18 talked about?

19 CHAIR STETKAR: Beyond what we've already
20 talked about or anything you'd like to reiterate.

21 MR. BROWN: Nope. I've gotten them gone.

22 CHAIR STETKAR: Good. Thank you.

23 CHAIR STETKAR: Harold?

24 MEMBER RAY: Well, I just want to say I
25 thought we had very good presentations on this subject

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 today. It's not a question. But there's obviously
2 stuff for us to ponder, but this has had such a long
3 history, which is where we started out the discussion
4 with, that it's difficult to raise a question at this
5 point to make any sense. But, anyway, I thought clear
6 through the last presentation here it was very useful,
7 informative.

8 CHAIR STETKAR: Good. And I'd like to
9 echo that. I'd like to thank the staff and NEI and
10 PROS for kind of clearly laying the issues on the
11 table and providing both sides of the question. It
12 doesn't make it easier to ponder, but at least we
13 understand pretty clearly where they are.

14 And if there's no other discussion, I
15 think we'll close the meeting.

16 (Whereupon, at 4:29 p.m. the Subcommittee
17 meeting was adjourned.)

18
19
20
21
22
23
24
25

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701



Draft Final Regulatory Guide 5.73 “Fatigue Management for Nuclear Power Plant Personnel”

Valerie Barnes, Ph.D.
Senior Technical Advisor for Human Factors
Office of Nuclear Regulatory Research
March 3, 2009

Topics

- Fatigue rulemaking history
- Overview of 10 CFR Part 26, Subpart I
- History of regulatory guide
- Overview of draft final RG 5.73
- Implementation and publication schedules

Rulemaking History

- 1982 NRC policy on worker fatigue (GL 82-12)
- 1999 SRO petitioned for enforceable work hour limits for safety-related duties
- 2001 Staff reviewed implementation of GL 82-12
- 2002 Commission approved rulemaking plan for reactors
- 2002 – 2005 NRC held 16 public meetings on draft rule
- 2005 NRC published proposed rule
- 2006 Staff incorporated public comments in draft final rule, held additional public meetings
- 2007 Commission affirmed draft final rule
- 2008 NRC published final rule
- 2009 18-month implementation delay for fatigue management provisions (October 1, 2009)

Why Rulemaking?

- Few events at nuclear power plants have been attributed to fatigue, however --
- Working conditions that contribute to fatigue are prevalent in the nuclear power industry
- Fatigue affects worker fitness for duty
- The Commission determined that previous requirements and practices could be substantially improved

Contributors to Fatigue at Nuclear Power Plants

- Scheduling factors
- Staffing factors
- Task factors

Worker Fatigue Incidents/Issues (2000-2006)

- 5 operators sleeping
- 1 STA inattentive
- >10 incidents of inattentive security officers
 - 2 instances of officers driving into barriers
 - 2 instances of both officers at a post sleeping
 - “Ready room” incident
- 1 chemistry technician sleeping
- 4 instances of inadequate OT control
- Continued self-declaration concerns

Fatigue Degrades Critical Skills and Abilities

- Attention
- Grammatical Reasoning
- Communications
- Decision making
- Teamwork

Limitations of Former Regulatory Framework

(NRC Policy Statement and Unit Tech. Specs.)

- Undefined terms and advisory language
- Use of waivers not clearly limited
- Cumulative fatigue not effectively addressed
- Limited to addressing only fatigue caused by work hours

Rulemaking Goal

“To strengthen the effectiveness of FFD programs at nuclear power plants in ensuring against worker fatigue adversely affecting public health and safety and the common defense and security by establishing clear and enforceable requirements for the management of worker fatigue.

Subpart I: Managing Fatigue

- Applies only to plants in operational phase
- General fatigue management program elements apply to anyone with unescorted access to protected areas
- Work hour controls apply only to “covered workers”

General Fatigue Management Requirements

- Self-declaration procedures
- Fatigue assessment procedures
- Training and examinations
- Recordkeeping, reporting and audits

Additional Requirements for “Covered Workers”

- Work hours scheduling
- Work hour limits
- Rest break requirements, including minimum days off
- Waivers
- Special self-declaration procedures when working under a waiver

Who are the covered workers?

- Work hour controls required for
 - Maintenance
 - Operations
 - Chemistry
 - Health Physics
 - Fire Brigade
 - Security
 - Individuals who direct risk-significant maintenance & operations

Work Hour Limits and Break Requirements*

- Retains maximum of 16 hours in any 24-hour period, 72 hours in any 7-day period
- Increases maximum work hours in any 48-hour period from 24 to 26 hours
- Increases minimum break period between work periods from 8 hours to 10 hours

**Compared to GL 82-12*

Minimum Days Off Requirements

Cumulative fatigue – the increase in fatigue over consecutive sleep-wake periods resulting from inadequate rest.

Minimum Days Off Requirements (Normal Operations)

Vary according to:

- Plant state (operating or outage)
- Shift duration (8, 10, or 12 hours)
- Job duties
 - maintenance
 - operations, health physics, chemistry, fire brigade
 - security

Minimum Days Off Requirements (Normal Operations)

- In each shift cycle, an average of:
 - 1 day off/week for 8-hour shifts
 - 2 days off/week for 10-hour shifts
 - 2-3 days off/week for 12-hour shifts, by job duties
 - maintenance: 2
 - operations, HP, chemistry, fire brigade: 2.5
 - security: 3
- Days off must be distributed to provide at least 1 day off in any 9-day period

Minimum Days Off Requirements (Unit Outages)

- Maintenance 1 day off in any 7 days
- Operations, HP, chemistry, & fire brigade 3 days off in each non-overlapping 15-day block
- Security 4 days off in each non-overlapping 15-day block

Minimum Days Off Requirements (Unit Outages)

- Individuals are limited to 60 consecutive days of outage scheduling
 - 7-day extensions allowed for each 7-day period during an outage when an individual works not more than 48 hours
- Individuals are subject to outage controls “while working on outage activities”

Waivers for Covered Workers

- Permitted only under conditions necessary to prevent or mitigate conditions adverse to safety or security
- Granted only after a supervisory assessment of the individual

History of Regulatory Guide

- Began public meetings in September 2006
- Published DG-5026 for comment in September 2008
- Held public meeting to discuss DG in October 2008
- Draft final RG 5.73 endorses Rev. 1 of NEI 06-11 with two exceptions, and several additions and clarifications

Draft Final RG 5.73

Additions and Clarifications

- NEI 06-11, Rev. 1, included new guidance, requiring some clarification
- Staff agreement with public comments
- Other suggestions and requests for clarification from public comments, particularly IBEW

Two Areas of Substantive Disagreement with NEI 06-11, Rev. 1

- Both relate to applying the minimum days off (MDO) requirements
 - Concept of periodic overtime
 - Applicability of MDO requirements to minimum shift complement of operators on the operating unit(s) at a multi-unit site with one or more units in an outage

Periodic Overtime Guidance in NEI 06-11, Rev. 1

- Establish a shift schedule that includes the required MDO
- Permit unscheduled work hours, as needed
- At least quarterly, identify individuals who have averaged >54 work hours/week
- Review the circumstances, determine if a schedule change is needed going forward, document in the corrective action program

Overview of Staff Position on Periodic Overtime

- Unnecessary - regulation includes flexibility for periods of unscheduled work hours
- Inconsistent - guidance in NEI 06-11, Rev. 1, would
 - allow unscheduled work hours to be excluded when determining the applicable MDO requirements and circumvent 10 CFR 26.205(d)(3)
 - circumvent the waiver requirements in 10 CFR 26.207

Flexibility for Emergent Work Provided in Work Hour Limits

- Work hour requirements permit covered workers to work as many as
 - 16 hours in any 24-hour period
 - 26 hours in any 48-hour period
 - 72 hours in any 7-day period

Flexibility for Applying MDO Requirements

- MDO requirements can be met based on average daily work hours over a period of up to 6 weeks
- Over a shift cycle, a covered worker may work
 - an average of 9 hours/day if he or she has, on average, 1 day off /week;
 - an average of 11 hours/day if he or she has, on average, 2 days off per week; and
 - for some categories of personnel, 13 hours/day if he or she has, on average, 2 days off per week
- Licensees have the flexibility to distribute these extra work hours as necessary to accommodate emergent work

Flexibility for Granting Waivers

- Waiver provisions permit exceeding the work hours, rest break and MDO requirements to prevent or mitigate conditions adverse to safety or security

Draft Final RG 5.73

- Retains staff position in DG-5026 that the concept of periodic overtime is unnecessary and inconsistent with the regulation
- Includes more detailed guidance on methods to implement the MDO requirements that the staff would find acceptable

Minimum Shift Complement Guidance in NEI 06-11, Rev. 1

- Applies to licensed operators (ROs and SROs) working on the operating unit(s) at a multi-unit site with at least one unit in an outage
- Maintains one RO and one SRO on operating MDO for each operating unit

Staff Position on Minimum Shift Complement

- Licensed operators working on operating units should have operating MDO
- Reduced minimum shift complement, depending on number of units and control room configurations

**Minimum Number of Individuals Per Shift Working Nonoutage Schedules for
Onsite Staffing of Operating Nuclear Power Units during Outages¹**

Number of operating nuclear power units ²	Position	Two-unit site		Three-unit site				
		One Control Room	Two Control Rooms	Two control rooms				Three Control Rooms
				Single Control Room Unit in Outage	Single Control Room Unit and One Unit Served by Dual Control Room in Outage	One of the Two Units Served by Dual Control Room in Outage	Two Units Served by Dual Control Room in Outage	
One	Senior Operator	2(2)	2(2)		2(2)		2(2)	2(2)
	Operator	2(3)	2(3)		2(3)		2(4)	2(4)
Two	Senior Operator			2(2)		3(3)		3(3)
	Operator			3(4)		4(5)		4(5)

¹ Numbers in parentheses are minimum shift complement required by 10 CFR 50.54(m)

² For the purpose of this table, a nuclear power unit is considered to be operating when it is connected to the grid.

History of Staff Position

- Rule limits outage relaxation to workers “while working on outage activities”
- Staff agreed that maintenance and operations personnel working on common systems are eligible for relaxed outage work hour controls
- Disagreed that ROs and SROs responsible for the operating unit can be considered “working on outage activities”

Regulatory Bases for Staff Position

- 10 CFR 50.54(m)(2)(ii) establishes minimum shift staffing requirements for ROs and SROs on an operating unit
- Based on
 - the number of units
 - control room configurations
- At multi-unit sites, regulation requires more than one RO and one SRO per operating unit to monitor, respond to transients, implement the emergency plan, mitigate events

Policy Bases for Staff Position

- NRC policy and guidance on control room operations
 - 1989 “Policy Statement on the Conduct of Nuclear Power Plant Operations”
 - 2008 Regulatory Guide 1.114, “Guidance to Operators at the Controls and to Senior Operators in the Control Room of a Nuclear Power Unit”

Basis for NEI 06-11 Guidance

- The staff's position is not required by regulation and would
 - result in a significant negative impact on plant outage resources and/or schedule
 - lead to unequal distribution of work hours between operating unit and outage unit personnel, violating collective bargaining agreements at many utilities
 - could have a negative impact on nuclear safety

Revised Staff Position in Draft Final RG 5.73

- Draft final RG modifies the staff's position in DG-5026 by
 - Relaxing requirements for operators transitioning onto the outage unit
 - Permitting operators working outage hours to provide short-term relief for operators on the outage unit under certain circumstances
 - Clarifying that operators working on the operating unit may work on outage activities, except the operator at the controls and the senior operator in the control room required by regulation

Implementation and Schedule for Publishing Final RG 5.73

- Fatigue management requirements must be implemented no later than October 1, 2009
- Staff published the draft final RG to support licensee preparations
- Final RG will be published no later than May 31, 2009



Discussion

**Minimum Number of Individuals Per Shift Working Nonoutage Schedules for
Onsite Staffing of Operating Nuclear Power Units during Outages¹**

Number of operating nuclear power units ²	Position	Two-unit site		Three-unit site				
		One Control Room	Two Control Rooms	Two control rooms				Three Control Rooms
				Single Control Room Unit in Outage	Single Control Room Unit and One Unit Served by Dual Control Room in Outage	One of the Two Units Served by Dual Control Room in Outage	Two Units Served by Dual Control Room in Outage	
One	Senior Operator	2(2)	2(2)		2(2)		2(2)	2(2)
	Operator	2(3)	2(3)		2(3)		2(4)	2(4)
Two	Senior Operator			2(2)		3(3)		3(3)
	Operator			3(4)		4(5)		4(5)

¹ Numbers in parentheses are minimum shift complement required by 10 CFR 50.54(m)

² For the purpose of this table, a nuclear power unit is considered to be operating when it is connected to the grid.

INDUSTRY IMPLEMENTATION OF THE FATIGUE MANAGEMENT RULE

Russell Smith
Senior Project Manager
NEI
ras@nei.org

INDUSTRY IMPLEMENTATION

- 10 CFR Part 26 issued on March 31, 2008
- Implementation Period of 18 Months
- NEI Issued NEI 06-11 Revision 1 in October 2008
- Industry Training
 - NEI Conducted Training for 50 Utility Project Managers in March 2008
 - NEI Workshop for 200 Utility and Vendor Personnel in May 2008
 - NEI Workshop for 150 Utility and Vendor Personnel in February 2009

INDUSTRY IMPLEMENTATION

- Station FFD Procedures and Policies Updated
- Work-hour Tracking Software in Development
- Staffing Increases
- Training
 - INPO Revised General Employee Training – September 2008
 - INPO is Developing Fatigue Assessment Training – ECD June 2009
- Employee Communication Campaigns at All Stations

Regulatory Guide 5.73

Exceptions to NEI 06-11

- Eligibility for outage minimum days off (MDO)
- Determination of a Worker's Schedule

Eligibility For Outage Minimum Days Off (MDO)

Rule Language:

During the first 60 days of a unit outage, there are reduced minimum days off requirements for individuals, while those individuals are working on outage activities.

Industry Guidance Needed:

At multi-unit stations when a unit is in an outage and one or more unit(s) are operating, who is eligible for outage minimum days off requirements?

Eligibility For Outage Minimum Days Off (MDO)

- NRC guidance
 - licensed operators composing the minimum shift complement of operators required under 10 CFR 50.54(m) are not eligible for outage MDO requirements
 - Also requires this minimum shift complement be self relieving, increasing the number of operators not eligible for outage MDO
- Industry guidance is that normally all workers at a multi-unit site perform outage activities during an outage period and should be eligible for outage MDO
 - While the rule does not contain this requirement, industry guidance is that one RO and one SRO on each operating unit are not eligible for outage MDO

Eligibility For Outage Minimum Days Off (MDO)

- Not clear as to what the problem the outage exception for RO/SRO's is addressing
- The rule prevents fatigue during normal operation and outage operation
- During an outage, the rule allows relaxation of only 1 of the defense in depth measures – MDO
- The rule only allows relaxation of MDO for 60 days
- The staff position will change the way the industry performs outages
- The staff position creates unnecessary resource and labor issues

Determination of a Workers Schedule

Rule Language:

Ten (10)-hour shift schedule means a schedule that averages more than 9 hours, but not more than 11 hours, per workday over the entire shift cycle.

Industry Guidance Needed:

How to address hours worked in addition to the normal schedule, commonly referred to as overtime.

Determination of a Workers Schedule

- The NRC staff position is that actual hours worked determines the “schedule” as defined by 10 CFR Part 26
- The industry position is that a worker’s assigned schedule determines the “schedule” as defined by 10 CFR Part 26

Determination of a Workers Schedule

- The NRC staff position adds the complexity of increased schedule changes and MDO requirement changes
 - For an 8-hour a day schedule, a shift change could occur with as few as 16 hours' overtime in a six week period.
 - Can result in multiple schedules on the same work crew
- Impact is a significant distraction for first-line supervision

SUMMARY

- The rule is complex
- The industry has made significant progress in implementation of the rule
- NEI 06-11 Revision 1 provides guidance that meets all rule requirements
- Exceptions to NEI 06-11 Revision 1 are not necessary