PR-26
(70FR50442)

NEI BRIEFING TO COMMISSIONER TECHNICAL ASSISTANTS

January 29, 2007

Template=SECY-026

SECY-02

Industry Drug & Alcohol Testing for New Construction

- Standard Construction Site Program for all workers on site
  - Pre-employment
  - For cause
  - Following an OHSA accident
  - Random
- Benchmarks - Black & Veach, Shaw Group, Bechtel, Vickers, Zachary, Wheelabrator, G-UB-MK, Building Trades Council
- Industry recognizes importance of drug & alcohol testing program in assuring high productivity and quality
  - Agrees that all QA and QC personnel would be subject to full NRC drug and alcohol testing program

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Industry Input on Final Rule

- Full NRC regulated program would be implemented for all workers at a pre-determined time in construction schedule prior to implementing the "lock-down and secure" procedure
- NRC regulated program not necessary or needed until there is a radiological hazard – fuel is received at the construction site
  - No radiological hazard
  - Will impose unnecessary resource burden on NRC and industry

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Industry Position Operating Plants

- Existing FFD programs at operating plants are very effective
- Industry supported most aspects of proposed drug & alcohol testing program requirements
- Draft final rule still has issues industry believes should be resolved

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Industry Recommendations

- Don't prescribe Evidentiary Breath Testing machine requirements that require perfectly good machines to be replaced.
- Return to Blind Performance Testing requirements in the rule proposed.in 2005.
- As outage workers travel from site to site do not require downstream sites to track follow-up testing for those in treatment programs – leave it with originating site.

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Table 2C
2003 Test Results For Each Test Category And Work Category

Test Category	Licensee Employees	Long-Term Contractors	Short-Term Contractors	Total
Pre-Access				
Number Tested	8,309	779	63,900	72,988
Number Positive	41	8	708	757
Percent Positive	0.49%	1.03%	1.11%	1.04%
Random				
Number Tested	34,202	1,133	14,067	49,402
Number Positive	61	3	68	132
Percent Positive	0.18%	0.26%	0.48%	0.27%
For-Cause				
Number Tested	439	29	584	1,052
Number Positive	23	0	103	126
Percent Positive	5.24%	0.00%	17.64%	11.98%
Followup				
Number Tested	1,942	26	1,174	3,142
Number Positive	21	1	20	42
Percent Positive	1.08%	3.85%	1.70%	1.34%
Other				
Number Tested	545	59	597	1,201
Number Positive	1	0	36	37
Percent Positive	0.18%	0.00%	6.03%	3.08%
TOTAL				
Number Tested	45,437	2,026	80,322	127,785
Number Positive	147	12	935	1,094
Percent Positive	0.32%	0.59%	1.16%	0.86%
TOTAL without OTHER Category				
Number Tested	44,892	1,967	79,725	126,584
Number Positive	146	12	899	1,057
Percent Positive	0.33%	0.61%	1.13%	0.84%

Work Hours Rule

Jack Roe, NEI
Joe Bauer, Exelon

Outline

- Industry Support
- Human Performance
- Clarification
- Layers and Backstops
- Current Issues
- Security Officers
- Breaks
- Implementation Issues
- Conclusion
- Recommendations

Industry Support

- NEI supports the majority of this rule
- NEI wants to clarify two items in the Commissioner's Technical Assistant Note-Staff's Response to NEI Letter dated December 21, 2006 on Subpart I – Managing Fatigue
- NEI has drafted a guidance document for the implementation of the rule, NEI 06-11 "Fatigue Management for Power Reactors"

Plant Human Performance Data Review

- As discussed in NEI's comment letter of December 20, 2005, actual plant performance does not show any significant fatigue related issues.
- Throughout this rulemaking effort, there has been no correlation between the claimed impacts of fatigue and actual human performance at power reactor sites.

Plant Human Performance Data Review

In proposing the rulemaking, an assessment was cited by NRC showing that:

- "There are only a limited number of events at U.S. nuclear power plants that have been attributed to fatigue. In addition, the overall number of events at nuclear power plants has been declining for the past several years." (See SECY-01-0113, Page 3 (June 22, 2001)).
- Commissioners also recognized that there were few events in the industry. (See SRM-SECY-01-0113 (January 8, 2002)).

Plant Human Performance Data Review

- The industry investigated the rule package assertion that individuals who work more than six days are causing fatigue induced errors.
- The review looked at human performance events on each day of the shift cycle. The second review focused on human performance during an extended outage. A week-by-week review of human performance was conducted.
- These results were provided in a 48 page NEI letter to Michael Case, NRC, dated February 3, 2006.
- Again, the results do not support the assertions in the rule package.

Clarification of Commissioner's Assistant Note

- Hours of duty
- Commissioners Note:

  "In addition, the FMCSA's 34-hour break requirement was established in conjunction with a limit that prohibits driving after 60 hours of duty in 7 days…"

- FMCSA rule also allows 70 hours in 8 days.

Clarification of Commissioner's Assistant Note

- FMCSA Statement

  "The rule requires all drivers of property-carrying commercial motor vehicles (CMVs) in interstate commerce to take at least 10 consecutive hours off duty before driving, limits driving time to 11 consecutive hours within a 14- hour, non-extendable window after coming on duty, and prohibits driving after the driver has been on duty 60 hours in 7 consecutive days, or 70 hours in 8 consecutive days. Drivers may restart the 60- or 70-hour "clock" by taking 34 consecutive hours off duty." (Emphasis added) (*Federal Register* / Vol. 70, No. 164 / Thursday, August 25, 2005, page 49980)

Clarification of Commissioner's Assistant Note

- 34-hour Break for night drivers
- Commissioner's Assistant Note:

  "FMCSA's expert panel noted that a 34-hour break is the absolute minimum necessary for recovery, and only if it provides an opportunity for two sleep periods between midnight and 6 a.m." (emphasis added).

Clarification of Commissioner's Assistant Note

- 34-hour Break for night drivers
- FMCSA Statement:

  " two 8- hour sleep periods give drivers an adequate opportunity to help minimize such acute and cumulative fatigue, regardless of their driving schedule."

Clarification of Commissioner's Assistant Note

- FMCSA Statement

  "While the two consecutive 8-hour sleep periods that some night drivers will utilize for sleep are not ideal, the rule will limit the build-up of cumulative fatigue; hence, the two 8-hour sleep periods give drivers an adequate opportunity to help minimize such acute and cumulative fatigue, regardless of their driving schedule." (Emphasis added) (*Federal Register* / Vol. 70, No. 164 / Thursday, August 25, 2005, page 50023)

Breaks

- 34-Hour Break Requirement to Address Cumulative Fatigue
- Federal Motor Carrier Safety Administration 2005 Rule is based on 34 hour break
  - Daily limit
  - 10-hour break between work periods
  - 60- or 70-hour limit
  - 34-hour break
    - The two 8- hour sleep periods give drivers an adequate opportunity to help minimize such acute and cumulative fatigue, regardless of their driving schedule

Breaks

- Sufficient Acute and Cumulative Fatigue Measures
  - **Daily limit**/ Weekly limit
  - **10-hour break between work periods**
  - **34-hour break**
    - The two 8- hour sleep periods give drivers an adequate opportunity to help minimize such acute and cumulative fatigue, regardless of their driving schedule
- Key Issue - NRC Rule goes beyond sufficient

Layers and Backstops

First Layer

- 16 work hours in any 24-hour period;
- 26 work hours in any 48-hour period; and
- 72 work hours in any 7-day period.

And,

- **A 10-hour break between successive work periods**

Layers and Backstops

Second Layer

- **34-hour break in any 9-calendar day period**

Third Layer

- Minimum number of days off

Shift Schedule	Average Days Off
8-hour	1 day/week
10-hour	2 days/week
12-hour	2.5 days/week

Going on Shift

The rule also contains another requirement for beginning or resuming duties subject to work hour controls as follows:

- If an individual begins or resumes performing covered work then the following guidance applies:
- All of the individual's work hours including hours worked performing non-covered work are counted.
- The individual shall meet all work hour requirements backward looking from the beginning of the six week shift cycle.

Reviews

Review must address:

- Individuals whose actual hours worked during the review period exceeded an average of 54 hours per week in any shift cycle;
- Individuals who were granted more than one waiver during the review period; and
- Individuals who were assessed for fatigue.

Corrective Actions

Corrective Action

- The licensee must also record, trend, and correct, under the licensee's corrective action program, any problems identified in maintaining control of work hours consistent with the specific requirements and performance objectives of the rule.

Backstops

- Self-declaration
- Waivers-strict criteria
  - Necessary to mitigate or prevent a condition adverse to safety / security
- Fatigue assessments
  - For-cause
  - Self-declaration
  - Post-event
  - Follow-up

NRC Work Hours Rule
Current Issues

- Outage breaks
  - –One outage
  - –Consecutive outages
- Average break requirements
- Security Officers have different break requirements

Security Officers

- Security Officers have different break requirements
  - 4 (versus 3) days off in each successive (non-rolling) 15-day block of the outage
  - 12-hour shift schedules shall have at least 3 (versus 2.5) days off per week
- Scientific basis appears to be lacking

Outage Breaks

NRC Rule:

- During the first 60 days of a plant outage, a minimum of three 24-hour breaks in each successive (i.e., non-rolling) 15-day period.
- If someone works two or more successive outages that start less than two weeks apart, the rule specifies that the "60-day clock" starts from the beginning of the first outage.
- After 60 days, a worker must adhere to the normal operation work hour limits of 48-54 hours per week.

Industry Proposal:

- A 34-hour break in any 9-day period.
- Same requirement as normal operations.

Basic work hour controls for outages

- What is the practical impact for an outage?
- 12 hour shift workers are limited to 67 hours per week by 3 in 15
- Negative impact

Basic work hour controls for normal operation

Licensees shall control the work hours of covered individuals as follows:

- Individual's work hours do not exceed the following limits:
  - 16 work hours in any 24-hour period
  - 26 work hours in any 48-hour period
  - 72 work hours in any 7-day period
- A 10-hour break between successive work periods, or an 8-hour break between successive work periods when a break of less than 10 hours is necessary to accommodate a crew's scheduled transition between work schedules or shifts.
- A 34-hour break in any 9-calendar day period.

Basic work hour controls for normal operation

Third Layer

- Minimum number of days off

Shift Schedule	Average Days Off
8-hour	1 day/week
10-hour	2 days/week
12-hour	2.5 days/week

- Industry Proposal:
  - Goes beyond what is needed for fatigue management
  - Remove requirement

Financial Impact on Outage Workers

- For this analysis, we assume that the outage is 35 days and typical outage worker will work 4 outages.
- We assume the pay is based on straight time for the first 40 hours per week and time and one half for all hours over 40 hours per week.
- The labor rate information is U.S. averages and was taken from the Construction Labor Research Council, "Construction Labor Rate Trends and Outlook", February 2006.

Financial Impact on Outage Workers

The average impact (lost wages) for a worker each year working four outages is:

$6,546.60

- Could discourage them from seeking employment at the nuclear plants.
- They can accept offers of employment on jobs at non-regulated facilities that afford them the opportunity to increase their earnings.
- Note letters from unions, associations, and others

Financial Impact on Outage Workers

Category	Hourly rate	Overtime rate at time and one half	Pay for 35 day outage under Industry Position Average of 72 hours per week First 40 hours at straight time Remainder at time and one half	Pay for 35 day outage under NRC position Average of 67.2 hours per week First 40 hours at straight time Remainder at time and one half	Difference for one outage	Difference for four outages
Mill Wrights	$41.11	$61.67	$18,088.40	$16,608.44	$1,479.96	$5,919.84
Pipe Fitters	$46.39	$69.59	$20,411.60	$18,741.56	$1,670.04	$6,680.16
Sheet Metal	$44.49	$66.74	$19,575.60	$17,973.96	$1,601.64	$6,406.56
Electrician	$49.86	$74.79	$21,938.40	$20,143.44	$1,794.96	$7,179.84
Average	$45.46	$68.19	$20,003.50	$18,366.85	$1,636.65	$6,546.60

Safety Impact on Outage

- Additionally, this excessive break time could have another unintended consequence of unnecessarily interrupting the continuity of carefully planned outage tasks and potentially introducing human error based on the increased number of handoffs of work tasks.
- Highly trained special work teams could also suffer as these excessive breaks would change the composition of the team on a day-to-day basis.

Implementation Issues

- Joe Bauer-Exelon

Implementation Issues Overview

- The proposed rule, at first glance, appears understandable and straight-forward; however,
- Compliance difficulties arise when applying the rules under "real-world" work/schedule scenarios
- Anomalies have been identified regarding the rule "intent" and verbatim compliance with the written words
- Some issues can be clarified with guidance; some issues will require changes in the rule verbiage
- Numerous implementation issues have been previously discussed with the NRC Staff – appreciate their receptiveness

Implementation Issues Topical Areas

Rule interpretation and/or implementation concerns have been identified in the following areas (and more):

- Rule applicability (who and what activities the rules apply to)
- Day-off requirements for workers performing "covered" work on an infrequent/intermittent basis
- Limits on "incidental duties performed off site" (what can and cannot be done at home)
- Day-off requirements when changing shift schedules
- Outage day-off requirements
- Sixty-day limit on outage hours
- Two-week break requirement for outage workers

The following examples will focus on implementation difficulties with day-off and outage requirements.

Implementation Issues
Day-Off Requirements

Example: Assume John Doe is a staff engineer in the Operations Department who holds an active license. John works a nominal 10-hour day. John's normal work duties are NOT within the scope of the fatigue rule. Over the last 6 weeks John has had weekends off, except for the 2nd weekend of the 6-week period when he worked a half day on Saturday. Today, (Tuesday), John is asked to stand an SRO watch due to a shift member's illness. May John stand the watch?

Answer: No, John has not met the average number of days off requirement for 10-hour shift schedules (i.e., 2 days per week).

Implementation Issues
Day-Off Requirements

Example: Assume John Doe is a staff engineer in the Operations Department who holds an active license. John works a nominal 8-hour day. John's normal work duties are NOT within the scope of the fatigue rule. Over the last 6 weeks John has had weekends off, except for the last weekend when he worked a half day on Saturday and a half day on Sunday. Today, (Tuesday), John is asked to stand an SRO watch due to a shift member's illness. May John stand the watch?

Answer: No, Tuesday will be the 9th day John works without a day off.

Implementation Issues
Day-Off Requirements

Example: Assume that John Doe is a staff engineer in the Engineering Department responsible for the Containment Spray (CS) system (i.e., a risk significant system). John works a nominal 8-hour day. The majority of John's normal work duties are NOT within the scope of the fatigue rule; however, once per month John conducts the Technical Specification ASME test on the CS pump which takes approximately 2 hours. Over the last 6-week period, John worked half days on Saturdays and had Sundays off, except for the 2nd weekend of the 6-week period when he worked a half day both days of the weekend. May John conduct the CS pump test today?

Answer: No, John has not met the average number of days off requirement for 8-hour shift schedules (i.e., one day off per week).

Implementation Issues
Day-Off Requirements

Example: The entire Maintenance Department normally works 8-hour days and have weekends off. During the last 3 weeks of the past 6-week period, in preparation for an outage, the entire department has been scheduled for five 12-hour shifts (Monday through Friday with weekends off; i.e., 60-hour weeks). Is this work schedule in compliance with the new fatigue rules.

Answer: The rule is unclear in this instance and does not address day off requirements for a 6-week period when an individual's schedule changes. One interpretation is that these individuals violated the rule since they should have had 2.5 days off per week while they work a 12-hour schedule. One could average the day-off requirements for 8-hour and 12-hour shifts; i.e., (1+2.5)/2=1.75; since the department had an average of 2 days off per week; they are in compliance.

Implementation Issues
Outage Requirements

Example: Section 205(d)(7) states that when an individual works for "a licensee" during two or more unit outages and the interval(s) between successive outages is less than 2 weeks, licensees shall start counting the 60 day "outage window" from that start of the first outage. How will this rule be interpreted for outage services personnel who travel from outage to outage without a 2-week period between outages?

- Is the term "a licensee" meant to be taken literally which means the 2-week interval between outages is only applicable to subsequent outages worked at different plants but owned by the same licensee?

Answer: The 2-week "break" between outages is necessary to reset the 60-day clock only when working for the same licensee. A worker may work at successive outages, but for different licensees, and get a fresh 60-day clock without a 2-week break between outages.

Implementation Issues
Outage Requirements

Example: An individual starts working at an outage on the 59th day of the outage. May this individual work "outage hours" for the next 60 days?

Answer: 26.205(4), "During the first 60 days of a unit outage…," would imply that outage hours may only be worked for 60 days from the start of the outage; and therefore, this individual would only have one day left to work "outage hours." However, 26.205(6) allows the 60-day period to be extended in 7-day increments for an individual, if that individual works no more than 48 hours for a 7-day period during the first 60 days of the outage. These two rules conflict. 26.205(6) suggests that this individual would get a fresh 60-day window to work outage hours starting at the 59th day of the outage.

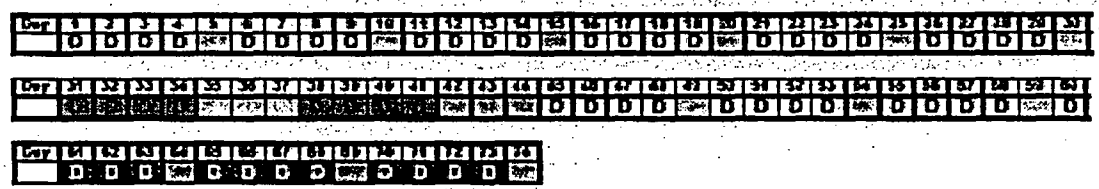
Implementation Issues
Outage Requirements

Example: Section 205(d)(4) defines different day off requirements during the first 60 days of an outage; however, the requirements of 205(d)(2)(ii), i.e., a 34-hour break in any 9-day period, is also applicable during outage periods. How will this requirement be applied during the transition from "normal operations" to "outage operations?"

Answer: The requirement of 205(d)(2)(ii) must be applied during the transition into an outage; i.e., an individual must not work more than 8 consecutive days. If an individual works a normal 8-hour day Monday through Friday (i.e., 5 days) prior to an outage; then starts outage work on Saturday, (since the unit came line on 0000 hours Saturday), this individual may only work a total of 8 consecutive days prior to getting a day off during the outage. To comply with this rule, this individual would have to take Tuesday off, i.e., the 9th consecutive day, which is the 4th day of the outage.

Implementation Issues
NRC Proposed Outage Schedule

Part C-1 Example 1
Work Hour Control for Extended Outages
Reduced Work Hour "Credit"



*The two weeks shown in blue, 31-44, form two 7-day periods that the individual or group worked not more than 48 hours. Therefore, individuals on this schedule can work under outage work hour controls for two weeks beyond day 60 (shown in green).

Summary

- NEI supports the majority of this rule.
- No correlation between the claimed impacts of fatigue and actual human performance at power reactor sites.
- FMCSA found that the two 8- hour sleep periods (34-hour break) give drivers an adequate opportunity to help minimize such acute and cumulative fatigue, regardless of their driving schedule.

Conclusion

- Negative financial impact on workers
- Potential unintended impact on nuclear safety
- Implementation Issues

Recommendations

- Change the outage requirement for 3 days off in each successive (non-rolling) 15-day block of the outage to a 34-hour break in any 9 day period
- Remove the requirement for two or more successive outages that start less than two weeks apart
- Remove the third "layer" requiring a minimum days off for normal and outage operations. The first two "layers" including the 34-hour break provide the necessary protection against cumulative fatigue
- Security officers should have the same work hour controls as workers performing nuclear safety tasks

Recommendations

NEI recommends revisions to Section 26.205 that will:

- Address acute and cumulative fatigue,
- Establish a clear, logical and practical rule,
- Establish the same requirements for normal operations and outages,
- Establish the same requirement for all individuals subject to work hour controls,
- Establish 34-hour recovery periods that are used by the Federal Motor Carrier Safety Administration and are based on scientific evidence, and
- Provide for reviews and corrective actions under the licensee's corrective action program,

Further Information

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