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INDUSTRY SPEAKER NOTES FROM  
NOVEMBER 18, 2010 PUBLIC MEETING  
ON FATIGUE RULE

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## INDUSTRY INTRODUCTORY REMARKS

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JIM LASH

PRESIDENT AND CHIEF NUCLEAR OFFICER

FIRSTENERGY NUCLEAR OPERATING COMPANY

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Good morning, I am Jim Lash, CNO for the FENOC fleet. I appreciate the opportunity to open the industry portion of this public meeting on the unintended consequences of the Part 26 Fatigue Management Rule.

Over the years, the industry has been engaged with the NRC staff on formulation and implementation of this rule. The NEI guidance document had over 20 revisions to it as alignment was attempted with the NRC staff. This culminated with a 60-page Regulatory Guide and almost 50 frequently asked questions with some issued right up to time of implementation in October of last year. I say this to highlight the complexity of the rule and the lack of clarity to be able address the multitude of schedules and working conditions it is trying to regulate.

We agree that managing fatigue is important and that it is imperative that we have a work force that is fit for duty, including being sufficiently rested to perform cognitive duties with high levels of proficiency. But being rested is not the only factor in proficiency. Training, high standards of excellence, teamwork, quality of life, compatibility with work schedules and personal lives are just a few of the overall factors that define a worker's ability to perform work well and also have a high contribution to the overall safety culture.

The complexity of the rule has resulted in unintended consequences that have diminished the safety benefit the rule was intended to achieve. The unintended consequences include adverse impacts to safety beneficial practices that have become core elements of our safety infrastructure, adverse impacts on quality of life issues for workers, and, conflicts with bargaining unit agreements. The industry's petition for rulemaking submitted on September 3, 2010, delineated a number of these impacts.

The rule does not need to have the inordinate level of complexity and rigidity that currently exists in order to achieve its objectives. After a year of working with the rule in its current state and trying to resolve the complexities through software and procedure changes, the industry believes the best approach to relieving some of the burden of the rule and the unintended consequences is to simplify the rule while retaining the intended objectives of the rule.

It is for this reason we are here to discuss the regulatory action we have requested the NRC staff to consider. The information we present will provide the basis behind our request for enforcement discretion. The rigidity of the minimum days off causes real concern for the quality of life, both at work and at home for our workers. The Enforcement Discretion request does not come without much thought and consideration. Its intent is to address a root issue leading to many of the unintended consequences, namely, the rigidity caused by minimum days off. Therefore, we feel an approach addressing each of the unintended consequences would only address symptoms of the problem and would not reduce complexity but add to it. Such an approach will add to the already unreasonable administrative burden on the supervisors and, in fact, quite

possibly permit workers to spend even more clock-hours away from home.

The industry is not asking for more hours. The industry only wants to be able to manage the hours allowed by the current rule in a less rigid way. Our goals are to make the simplest, yet most impactful change relative to safety and preservation of the high levels of workforce proficiency we have come to expect. Without this short term enforcement discretion from the minimum days off requirement, maintaining this high level of safety margin in our workforce will be unreasonably and unnecessarily strained by the increased burden caused by the rule.

The adverse effects on quality of life have an impact on safety culture. Right now I believe our workforce is giving management the benefit of the doubt knowing we are trying to make improvements to the implementation of the rule. But more needs to be done than we can do with software and procedure improvements, and it needs to be done soon, otherwise the quality of life issues will manifest themselves in more serious ways.

We have brought to this meeting a broad spectrum of industry experience. These respected industry leaders will articulate the issues we are experiencing at the sites that have created substantial additional burden and have diminished the safety benefit the rule was intended to achieve. At this point I would like to turn it over to our panel chairmen to establish the discussion on their specific topics. We have four panels representing Operations, Maintenance, Security, and Vendors and Unions. Each panel chairman will have a brief opening statement and then go right into specific examples and impacts from the rule. Dave Heacock, CNO of Dominion will provide closing remarks and turn the meeting back to the NRC at the conclusion of our panels.

Thank you

I would like to introduce Mr. Jim Meister, VP of Operations Support for Exelon who will chair our Operations Panel.

## OPERATIONS PANEL DISCUSSION

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JIM MEISTER

VICE PRESIDENT, OPERATIONS SUPPORT

EXELON CORPORATION

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Thank you, Jim. Good morning, I am Jim Meister, Vice President, Operations Support for Exelon. I appreciate the opportunity to provide opening comments regarding the fatigue rule and the impact of the unintended consequences of the minimum days off on the operations organizations. As Jim stated, managing fatigue is important. It is imperative that we have a work force that is fit for duty. This is especially true for those licensed and non-licensed operators entrusted with operating our plants in a safe and conservative manner.

The Operations departments have been impacted by the rule's complexity and inflexibility and the resulting unintended consequences of the MDO. Operations personnel, as well as other groups, are not able to ensure compliance with the rule without sophisticated computer software resulting in increased administrative time for both the worker and the supervisor. For managers, filling on-shift positions where operators have called in sick or become ill during the shift is no longer a simple task. Often running the lists to fill a position removes the manager from an oversight position to verify through the software tracking tool that the worker meets the requirements. The lack of rule flexibility, especially with the minimum days off, also limits the ability of the operators to revise shift schedules for personal reasons, affecting their quality of life.

Risk management is a primary function of the operations crew. In some cases, the work hour limits have impacted the ability to minimize the risk. We will discuss examples where work hour restrictions have delayed the restoration of repaired equipment to service. While the equipment is restored within the time required by the operating license, risk could have been more effectively managed with more flexibility in the work hour limits, particularly the MDO.

Operator participation in on-shift and off-shift activities that substantially benefit safety has been impacted. Training activities performed just prior to significant or infrequent evolutions are impacted by MDOs. Off-shift activities impacted include crew or shift manager alignment meetings, outage preparation meetings, training observations, licensed operator training curriculum reviews and participation in industry benchmarking. Each of these activities has a safety benefit. The current rule has minimized their beneficial effect.

Our panel is comprised of Operations management individuals, with many years of operations experience. The members are Tom Waechter from Seabrook, Nick Pappas from Palo Verde, Dave Pitsley from Progress Energy, Karl Jones from Arkansas Nuclear One and Mitch Taggart from the Professional Reactor Operator Society and they represent stations across the industry. Each member will share examples from their station or organization where the complexity and rigidity of the rule has created substantial additional burden and has diminished the safety benefit the rule was intended to achieve.

Thank you,

## OPERATIONS PANEL DISCUSSION

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KARL JONES

ANO OPS MANAGER

ENTERGY

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### Introduction:

My name is Karl Jones. I am the Operations Manager @ Arkansas Nuclear One (ANO). I manage U-1 which is a 900 MW Babcox & Wilcox PWR and U-2 which is a 1050 MW Combustion Engineering PWR. I am responsible for the overall safe operation of both units. My staff is comprised of approximately 200 Operators. I qualified all Operator Watch Stations through Shift Manager where I held a Senior Reactor Operator License on U-1. I have been in Commercial Nuclear Power for 19 yrs. I served 6 years in the United States Navy aboard a nuclear powered Fast Attack Submarine. My role in Fatigue Management implementation has been to ensure compliance with the MDO Rule and manage the MDO Rule's impact on safety related activities for my department as well as those additional departments covered by the rule.

I will be speaking to (3) examples of the unintended consequences of MDO Rule on safety:

- The first example is speaks to the MDO requirement for my department related to outage execution and challenges my ability to perform Infrequently Performed Tests or Evolutions Briefs (IPTEs) off of critical path due to availability of my covered workers for the brief. The intent of an IPTE is to introduce increased management awareness and therefore involvement in infrequently performed tests or evolutions which have the potential to place plant equipment and operations outside the bounds of normal operational procedures and training. Industry experience indicates the need, under certain conditions, for additional management controls to assure proper execution of these activities. The IPTE Brief requires Senior Line Manager Oversight, Roles/Responsibilities and OE are reviewed along with communication protocol are completed for the upcoming evolution. Since my bargaining and supervisor staff availability has been reduced due to MDO in some instances we have delayed performing the IPTE Brief until the shift in which the activity is to be completed. This places the IPTE in the critical path sequence. This results in the extension of elevated risk to the plant. Lowered Inventory is the most vulnerable condition for a PWR due to the low times associated with Time to Steam and Time to core uncover due to Reactor Coolant System inventory. This example occurred during the last RFO on U-1 where exiting Lowered Inventory and Filling the Reactor Coolant System (RCS) was now delayed to perform an IPTE which reduced our level of Nuclear Safety by staying in the lowered inventory condition longer than necessary. To perform the IPTE Brief prior to the scheduled shift for exiting reduced inventory would be ineffective. The end result is the unit remained in a high risk condition longer than required.
- @ Arkansas Nuclear One we perform a (2) Week Look ahead for verification of proper watch coverage requirements, training and qualifications and fatigue rule compliance. This activity had been performed by the On watch Crew On the weekend during low activity time periods

with a duration of 30 minutes. The same activity now takes approximately 2 hrs. I have directed that his activity be performed by off-shift personnel who are also covered to minimize the distraction to the operating crew which is a high performing team and reduce risk to the plant. At times vacation, illness and assignment of my off-shift covered folks then requires the Shift to perform the Look Ahead.

- **The following examples of covered worker support activities that reduce the available experienced nuclear professional resources due to the > 30 minute covered work and MDO :**

- Oral Board support for qualifications
- New Operator interview panels
- TRG/TAC Training involvement
- OJT/TPE for Performance Tasks associated with qualification
- Error/disciplinary action investigations by the accountable SM/CRS. A quality CAP process needs a reasonable event investigation turnaround, documentation, interim actions and finally valuable corrective actions. The interviews, HPER, OE development and communication require incremental time to be spent to work the CAP.
- Emergency Plan & Force on Force Drills for scenario development and controller support
- Cross Crew / Cross Unit Evaluation

- These examples of incremental time spent performing industry wide good practices with the unintended impact of this incremental time counting as a full day of work defined by MDO limits the predictability and consistency of my organization to maintain industry wide good practices. Rule flexibility will support improved operation and safety within the industry.

## OPERATIONS PANEL DISCUSSION

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NICK PAPPAS

SHIFT MANAGER, PALO VERDE

ARIZONA PUBLIC SERVICE

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Good Morning. My name is Nick Pappas and I am a shift manager at Palo Verde. I appreciate this opportunity to speak to the board regarding unintended adverse consequences of the Fatigue Rule. I am a graduate of the Navy's Nuclear Power Program, and left the Navy in 1982 after 6 years with an honorable discharge.

I joined the Palo Verde Nuclear Power Project in November of 1982 as an auxiliary operator. This is my 28<sup>th</sup> year with Arizona Public Service. I received my Reactor Operators license in 1987, and my Senior Reactor Operators license in 1992. I have been a shift manager for over 10 years.

One of my responsibilities has been to author and administer the Operations pay policy, this has led to being the Operations point of contact for the Fatigue Rule implementation.

I was fortunate enough to take part in the early NEI conference on Fatigue Rule impacts and was able to listen to the rationale that was provided from both sides on the impacts and intentions of the Fatigue Rule to the workplace.

I am going to address 3 areas where MDO has had an unintended adverse impact

- Fragmented scheduling and short – turnarounds
- Compromised JITT training
- Loss of availability due to MDO – negative impact of resource availability and delays in restoration of plant equipment

**1- Forced short –turn arounds.** In order to cover for vacations or for emergent call offs due to being sick. The manning protocol will often have an individual get off night shift, and return to day shift the next day with <24 hours off. This is a very arduous turn around. This occurs in part due to the inflexibility of MDO protocol limiting the available days of shift coverage. ***This is actually one of the more fatiguing practices.***

Fragmented scheduling: Due to MDO requirements, we will often cover a vacation by having 3 separate individuals on days off cover 1 shift each. For night shift this will result in working a normal night schedule, take a shift off and return for a night shift. , vice covering all the shifts or splitting the shifts required. ***This leads to inconsistent supervision, and some disruption in the control room protocol, due to the varied crew makeup on any given day, standards may not be as uniformly enforced – in part due to the lack of SM phone calls/meetings which I will address later***

**2- JITT training – Define-** One of the most beneficial practices we employ to minimize risk, enhance

operator proficiency, improve reactivity management and overall plant performance. During JITT training, crews will practice the evolution in the simulator (including malfunctions) such that the actual performance in the unit has been practiced, we know what success should look like. Some evolutions that we use JITT training would be RCS draindown evolutions, reactor startup, and plant power ascension.

On at least 2 separate instances PV has been unable to conduct JITT training in an optimal manner, due to fatigue management issues. Once when exiting 2R15 outage, JITT was not able to be performed for each of the appropriate crews, and was limited to table top discussion. And in 3R15 just ending now, the JITT for the reactor startup was held many days prior to the evolution vice the day before, or immediately preceding the evolution in which case the practice is freshly ingrained in the crews mind.

***JITT is adversely impacted, since due to the unforeseen, emergent nature of maintenance activities, and delays that can not reasonably be accounted for, the individuals who did the JITT training are often not the individuals who perform the tasks.***

- 3- Loss of availability due to MDO impacts. This is causing an extraordinary impact on our resources: We often do not have the most experienced or desirable personnel for certain evolutions due to other activities having impacted MDO.

Some examples:

One unintended impact is :

***Lack of alignment in OPS due to no longer having SM monthly meetings and the cessation of weekly scheduled bridge calls.***

One phone call = a day of MDO.

Similar for CRS'. Thus we have 15 crews that are not as consistent as we strive to be to improve human performance. This has been a recurring issue and the fatigue rule has hindered progress in this manner.

Loss of resources due to required minimal-time, activities for the licensee.

For example: Another instance where a MDO day is lost is when an individual comes on site to get a required blood pressure check, or to attend to some limited time meeting. For example a 2 hour site leader meeting. If we attend, it burns a MDO day. ***Thus the OPS leaders are not necessarily aligned with the site vision.***

Travel day impacts. When we have individuals on a short business trip, we typically count the travel days as well as the work days away from site against MDO requirements. This can lead to unnecessary unavailability of an individual to perform covered work duties. If actual hours were allowed to be tracked vice losing an entire day of unavailability due to a 2 hour travel flight, it would reduce the burden on other individuals who are then forced to cover for work hours the person can not cover.

Other minimal time activities that result in a loss of a MDO day: oral boards, JITT training, medical physicals or checkups, team building, human performance investigation, exam validations (NRC and audit).

Scheduled phone calls – in order to attend this meeting, I had to participate in 2 bridge calls. This used up 2 MDO days where I would not be able to support my unit. Someone else will be forced to cover days I can not. **Resource utilization focuses on filling the gap, vice considering experience, or recent training, or who the best individual would be.**

Off shift CRS' and SM's are impacted in their ability to fill in on shift or maintain proficiency. An example: A work management CRS who may be working a standard day shift schedule, is often not used to augment the unit, due to future MDO conflicts, even though his hours may be <54 hours/week. And also often excludes the more experienced staff members from supporting unit activities. **One impact to safety is that these very individuals could be on-shift as an advisor to implement a work schedule they developed and are familiar with. This can help minimize risk impacts.**

Risk significant equipment can still get delayed in restoration activities. If an operating crew has briefed up on a "super train maintenance outage" and the equipment will not restore until their day off, **we do not bring in a person from the crew (even in an advisory role) to expeditiously restore the equipment.** We do not want to "burn" a f-rule availability day so we do not impact MDO in the future. If we were tracking work hours instead, we could provide continuity and allow a more efficient method of returning equipment to service and minimizing risk significance.

**STOP Here**

- 4- Resource impacts and flexibility. Most stations are working a 5 shift / 12 hour per day schedule, and have a "super crew" concept for outages. When on-line, over a 5 shift schedule, there are 13 mandated days off. (2.5 days off per week x 5 weeks = 12.5 days off. We round up to 13).

So, in PV's case 7 day shifts, 7 night shifts and 4 days in training. 18 days worked of a possible 35. Add 13 required days off, this is 18+13= 31 days.

Thus 4 additional days are available for "covered work" on shift due to MDO.

From a work hour perspective this calculates out to be 14days/nights x12 = 168 hrs+ 40 (tng) =208 hours scheduled per 5 week cycle.

If we add the 48 hours (4 extra days) then: 208+48=256 hours worked per 5 weeks.

256/5=51.2 hrs averaged.

As an example, if we eliminate the MDO ruling, then 14 shift days (168hrs) + 40 hours training = 208 hours. 60 additional hours (5 extra shifts) will total 268. 268/5 = 53.6 hours.

MDO restrictions 4 extra days worked	Hours worked		No Restrictions 5 extra days worked	
14 days worked	168 hrs		14 days worked	168 hrs
4 days of training	40 hrs		4 days of training	40 hrs
13 days off mandated	0		12 days off	0
4 extra work days	48 hrs		5 extra work days	60 hrs
Total hours worked	256 hrs		Total hours worked	268 hrs

per 5 week cycle		per 5 week cycle	
<b>Hours averaged per 5 weeks</b>	<b>51.2 hrs/wk</b>	<b>Hours averaged per 5 weeks</b>	<b>53.6 hrs/wk</b>

This additional shift capability would greatly eliminate concerns of short turnaround, (item 1), could support JITT and SM meetings/calls (items 2,3), allow tracking hours vice days.

- 5- Admin burden – this varies widely. The software is complex and non-intuitive. When an individual is sick, and replacement coverage is required, it places a large admin burden on the SM, who must validate the hours worked PRIOR to making any phone calls. ***Additionally, consideration must be given to any FUTURE impacts on forcing an individual out to work. We have at times forced individuals into work, and have had “pending deviation” warnings, such that we had to do an additional schedule manipulation to maintain MDO compliance at a future date. Every minute spent buried in administrative process is time not spent doing crew oversight, observations, plant walkdowns, or training.*** Not to mention, corrective action issues, procedure reviews, crew initiatives, as well as standard shift duties. Often something is just “not done” or done to the minimum standard due to being overburdened administratively.

Similar to the admin burdens mentioned in item #5, what work is not done due to admin impacts of the fatigue rule process? ***The shift management is being forced to make choices that are not consistent with plant performance improvement in order to service the work hour rules.*** Elimination of the MDO would significantly simplify the process, such that ANY individual could easily monitor their own time as well as freeing up shift supervision to focus on areas that need improvement.

- 6- The recognition that turnover time will vary. Need some flexibility to allow on-station relief and time for dressout. This had an impact in 2R15 when a conical flange watch stationed in containment exceeded work hours due to the time it took to get dressed out (for his relief to come in), and for him to get processed out of RP. A good concise turnover needs to be conducted, and if the course of the turnover, it goes long due to processing into/out of containment it should not be counted against fatigue management, as long as the other work hour rules are adhered to.

## OPERATIONS PANEL DISCUSSION

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DAVE PITSLEY

OPERATIONS FLEET FUNCTIONAL MANAGER

PROGRESS

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**Speaker notes not available at this time.**

## OPERATIONS PANEL DISCUSSION

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TOM WAECHTER

ASSISTANT OPERATIONS MANAGER

FPL

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### **Fatigue Rule**

#### **Unintended Consequences**

1. We have extended the time safety related equipment is out of service due to Fatigue Rule restrictions on the Maintenance personnel needed to support the work required to return the equipment to service. Two specific examples are as follows:
  - Two weeks ago, we were in a seven day Technical Specification action statement for one train of our Main Control Room Ventilation system. Due to unexpected problems with the scheduled maintenance on the associated supply breaker, we had to send the qualified electricians home for a mandated 10 hour break so they would not violate Fatigue Rule requirements. The remaining job duration at the time was one to two hours. This resulted in the station being in the associated action statement for ten additional hours with a safety related system unavailable to respond in an accident situation if needed. It also required the electricians to work an additional, previously unscheduled backshift to complete the work. This had a direct impact on plant safety, heightened our risk profile for the period the system was unavailable and had an adverse impact on the Quality of Life for the involved Maintenance personnel.
  - Last week, we had scheduled a Steam Generator Blowdown system outage in support of scheduled work. The blowdown system is important to maintaining the health of the secondary side of our Steam Generator tubes, which provide one of our fission product barriers. One of the blowdown system valves failed its post-maintenance retest due to an emergent problem, resulting in the station issuing a high priority work order to investigate and correct the cause of the failure. The system remained out of service for the duration of the repairs. Because the affected valve is in our containment building, Radiation Protection personnel were required to support the work. Due to the emergent nature of the failure, there initially were not adequate RP resources to support the repair 24/7. Instead, work had to be suspended for eight hours to reset the Fatigue Rule minimum time off clocks for some RP techs, who then came in at 0300 in the morning to support the remainder of the work activity. The remaining work took about 90 minutes to be completed, once work was resumed.
  - By having to bring back workers for the second night to complete these two jobs, we used an available work day resulting in a direct impact on their future availability due to compliance with Minimum Days Off requirements. While these two examples did not result in a violation of the plant's Technical Specification, they did result in an increase

in plant risk and reduced our operating margins. Neither of these impacts is desirable and they both are contrary to our goal of achieving and maintaining operational excellence.

2. We currently have an initial licensing class that will be taking their NRC licensing exam at the end of this month. In order to support their efforts, we assigned a Shift Manager to act as a full-time mentor to the class several months ago. When the Shift Manager assigned to this class had to go out on short term disability, we assigned another Shift Manager to replace him. Unfortunately, even though this Shift Manager had a two day weekend off and was not challenging the total hours worked, he had to take a mandated extra day off on a Monday so he would comply with the Minimum Days Off requirement of the rule. This adversely impacted the support the Operations department was providing to the Licensing class at a critical time in their exam preparations.
3. There have been multiple instances since the Fatigue Rule took effect where someone has called in sick or has had to miss their scheduled shift due to personal reasons. This position has to then be filled with minimal notice. This results in the onshift Work Control Supervisor, who directly manages, supports and coordinates the work on shift, having to find a replacement. Prior to contacting anyone, they have to run hours and verify Fatigue Rule compliance. A process that used to be relatively straightforward and efficient now sometimes takes several hours to ensure compliance with all of the various requirements of the rule. Often times, we have to adjust the schedules of multiple people as the rescheduling process can have a cascading effect to ensure future Fatigue Rule compliance. This results in the Work Control Supervisors not performing their normally assigned duties and detracts from the safe operation of the station due to the lost support of the work management process.
4. We used to have regularly scheduled Shift Manager meetings where call-ins were allowed for those personnel who were covering the back shifts. This facilitated our ability to operate the plant in the most effective and safe way possible. We always held these meetings on the day of the break between one shift going off of the night shift rotation and a new shift coming onto the night rotation in order to minimize any adverse impact to those Shift Managers from their participation in the meeting. These meetings allowed us to ensure we had alignment between the crews and that standards and expectations were understood and enforced. It allowed us to benefit from sharing lessons learned, Operating Experience and observation data with all six Shift Managers and to have constructive dialogue with Operations department management. Because of the rule, we no longer schedule these meetings, but instead have to try and cover the material via e-mail or in multiple meetings with smaller groups of the Shift Managers participating. This has proven to be much more time consuming and much less effective due to losing the benefits of the group dynamics.

## OPERATIONS PANEL DISCUSSION

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MITCH TAGGART

VICE PRESIDENT, PROS

CONTROL ROOM SUPERVISOR, CALLAWAY

AMEREN UE

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### Introduction

- Mitch Taggart – Shift Manager at Callaway
- I am also the Vice President of the Professional Reactor Operator Society, better known as PROS
- My role today is to represent PROS.
- I take that obligation seriously since I will be speaking for ~ 550 covered workers
- I have been the Lead for the PROS' response concerning Fatigue Management the last two years
- I was the Lead for the PROS' effort that resulted in a petition for rule change to redefine 'Unit Outage' and 'Outage Unit'

### PROS History for some who may not be familiar with the organization

- PROS was founded in the early 80s by licensed operators for licensed operators
- PROS has a national Board consisting of a President, Vice President, Secretary, Treasure and International Coordinator
- It is further structured with regional Presidents that coincide with the 4 NRC regions
- Each site has a Site Representative

### Consequences PROS has experienced with MDO

- The first,
- At one site a SRO was called in for an urgent one hour meeting
- After putting the hour meeting into time tracking software, the one hour meeting resulted in a MDO violation
- The SRO was completely unaware of the violation prior to the meeting or even possibility of a

violation until his time was entered into the software program

- Calculating MDO requires sophisticated software
- Without the MDO limitation, individuals and supervisors could monitor compliance without a computer program
- Operators must rely on a program to ensure their and their workers compliance with MDO limitations
- If the computer program happened to fail, the effort to manually verify compliance is too time consuming
- Operators are not comfortable relying on a computer program to ensure compliance of a federal law
  
- The second,
- Several field operator at facility were told they would have to cancel overtime to roll onto an outage schedule
- The field operators deliberately took 4 hour blocks of vacation on their regular schedule to lower the MDO work hour average
- They were then able to work additional overtime
- All work hour limitation were observed
- 5 field operators exceeded the 54 hour average after the adjustment, when only one would have violated the average prior to the adjustment
  
- The third,
- Shift Manager Meetings have basically stopped or been diluted by only a partial population of SMs
- MDO limitation directly impacts the number of SMs who can attend these meetings
- Without the SM meetings, internal OE (usually the most valuable) is not effectively shared
- In addition, SRO and RO meetings held at some facilities have also stopped
  
- And the final consequence,
- Short term watch relief coverage encompasses a larger portion of a supervisors time
- The time frame has increased by as much as a factor of 5
- The complexity of the process has prompted peer checks at many sites which requires more

supervisor time

- At one facility two unit supervisors spent over an hour each finding a fatigue-rule compliant replacement when an oncoming Operator called in sick (this used to take one supervisor a maximum of 30 minutes)

#### In Closing

- The Fatigue Rule doesn't make it impossible for present operating staffs to comply, it just makes it very difficult.
- The existing Operating staffs simply have to absorb the new administrative burden
- PROS members do not feel comfortable relying on a computer program for compliance with a Federal Law
- Further, our members who are supervisors of covered workers feel vulnerable being placed in a position requiring computer software to show compliance for their crew
- The PROS body of operators feel we have been put into an undesirable environment formed by the complexity and rigidity of the MDO limitations
- Our members feel their has been unnecessary burden placed on the very body of people the rule was intended to protect
- The replacement of the MDO limitation with a work hour weekly average would greatly reduce this burden while still meeting the objective of limiting worker fatigue

## MAINTENANCE PANEL DISCUSSION

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ROY SIMMONS

PLANT MANAGER, KEWAUNEE

DOMINION NUCLEAR

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Good morning my name is Roy Simmons; I am the Plant Manager at Kewaunee Power Station. My background has been involved with Operations, Training, Outage and Planning, and Maintenance. I would like to thank you for the opportunity to discuss the impact that the Minimum Day Off portion of the fatigue rule has had on Maintenance.

The focus from maintenance is to ensure that equipment important to safety is addressed in a judicious manner, is out of service for the shortest duration possible and that the equipment is RTS in the best condition possible. There are three primary areas, inter-related, where maintenance has been challenged by the minimum days off portion of the fatigue rule.

The first is the extension of OOS time of equipment important to safety. Any time a piece of equipment remains OOS longer than required then risk, both operational as well as probabilistic is increased. We have seen where LCO times were extended, safety related equipment work has been re-scheduled, and emergent equipment issues are not addressed in the desired timeframe. When a piece of equipment fails or is degraded our attention must be on how to correct this issue and who is the right person to work it vice who is available to work it and how do we ensure MDO is met.

The second area is the human performance aspect of performing work, with the requirements for minimum days off; several areas of HU have been impacted. Any Human Performance challenge is also an increase in risk. Specific areas include continuity of work on safety equipment, perceived time pressure at an individual worker level, being able to utilize the specialized crews on key equipment, and the ability of the supervisor to provide oversight and be focused on work preparation and execution vice managing the complexity of the MDO portion of the rule.

The final key area where we have been challenged is maintaining the highest possible safety margins for the station. Safety margins are maintained through the scheduling process and proper prioritization of work. Emergent scope challenges this margin and with MDO the flexibility to address emergent issues as well as scheduled work is challenged. MDO requires us to respond to issues with a larger population of the maintenance team, this means that key supervisors and workers must now be gone at inopportune times regardless of the work impacted. Therefore scheduled work must be deferred – this is work that has been scheduled, planned, prepared for, and resource loaded for months, this has potential for aggregate impact on the station and thus margins to safety. This also drives the necessity to perform smaller packages vice one longer package for a key piece of equipment due to the necessity to complete the work without impacting MDO – multiple packages affects efficiency which drives duration and OOS time. This also has a direct affect on MSPI (Mitigating Systems Performance Indicator). It requires duplicate testing and thus more impact on Operations and the station and promulgates less overall work being able to be accomplished in the limited time we have to perform maintenance. The Maintenance panel will be providing a few examples from their

experience that demonstrate these challenges.

I would like to introduce our panel of maintenance experts who have years of experience in their disciplines as well as a great deal of hands on experience with the MDO portion of the fatigue rule.

- Brian Patrick: Director of Maintenance, Comanche Peak
- Steve Phillips: Maintenance Manager, Vogtle
- Michael Milly,: Maintenance Manager, Prairie Island
- Janice Kunz: I&C Superintendent, Beaver Valley

Our first presenter will be Brian Patrick - Brian

Wrap-up:

In short and as a review – our maintenance charter is to *work safely, promptly, with the right people and fix equipment right.*

Regardless of the number of people we have there is limited time in every week when we can perform maintenance. When we touch a piece of equipment it must be handled with deliberate attention and efficiency. Proficiency on select equipment can only be maintained by so many people. We are moving away from safety every minute a piece of equipment is OOS longer than required and we are not addressing other equipment issues that we could be. Safety margins are decreased.

We are making decisions to not address maintenance issues in the same time frame or with the same specialized personnel we would have in the past when we had the ability to manage days off.

Human performance has caused most of the safety issues throughout the industry and *yet we find that barriers we have put in place, over the years, from lessons learned, to prevent events from a human performance perspective are being impacted by minimum days off* such as;

- Specialization (We spend a good deal of time selecting and training personnel to work a specific component and yet due to MDO we can't get those folks in to work the equipment)
- supervisor and crew teamwork and oversight (crews are hand selected to be together based on experience, training, qualifications, and even personalities),
- JIT training (you heard the challenges Operations has getting their crews together – imagine how more complicated it becomes when you try to include the maintenance members into JIT),
- cross department focus on issues (team response is the best way to deal with issues and yet this is hampered by MDO),
- continuity on maintenance packages and
- ensuring the worker has no undue perceived time pressures or other distractions (we work hard as supervision to ensure our folks stay on task but they all realize the significance of the rule and that they cannot violate work hours – this puts undue pressure on the individual that raises the chance of an HU event and therefore increase risk).

The complexity of the rule has removed the ability of the individual worker to own his or her work hours and fatigue. This has fallen to the supervisor and requires significant time commitments, at important times when their focus should be on how to do required repairs, to ensure no violations occur.

While the examples you heard from the panel were specific to their stations these issues clearly translate across the industry. MDO and the fatigue rule are discussed at every industry meeting I have been to lately and the same issues with the rule are discussed. This is an industry problem.

If we had enforcement discretion on this portion of the rule we could re-focus with greater attention on the plant and equipment, get our supervisors into the field with a greater frequency, reduce our risk and increase our safety margins.

That's all we have today – thank you.

## MAINTENANCE PANEL DISCUSSION

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STEVE PHILLIPS

MAINTENANCE MANAGER, VOGTLE

SOUTHERN NUCLEAR

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I would like to discuss two examples of how the MDO rule has added difficulty in dealing with both “planned” and “emergent” work on safety related equipment.

**The first example involves “planned” work on emergency diesel generators.**

At Vogtle, Tech Spec’s for EDG’s allows 14 day LCO’s for on line planned maintenance.

A team of speciality qualified individuals has been trained and developed over the years to perform DG maintenance accurately and efficiently. This has resulted in reduction in HU errors and minimizing out of service time for key safety related equipment.

Using the MDO rules, significant challenges are being encountered in scheduling DG work activities while maintaining continuity of the crew, having the correct skill sets available at the right time and the impact that working the DG crews overtime has on being able to address other emergent work that occurs in the cycle.

**The specific challenge the MDO rule creates** is the unintended consequences of having to focus on managing the hours worked by the DG team first, completing the task at hand second. The continuity of this team is reduced due to the MDO rule.

**Without the MDO rule**, the consistency of the team can be maintained while still adhering to the fatigue rules of not exceeding 72 hrs in 7 days. This will result in minimizing the out of service time for the DG.

Again, this challenge is for “planned” work, not “emergent” work.

**The second example was emergent work that occurred last week at Vogtle on one of our Atmospheric Relief Valves.**

To work on these hydraulic actuators requires a specific qualification. The SME’s began troubleshooting and repairing the emergent issue. However, due to the MDO rule, the SME’s and their FLS were required to take Sunday off before completion of the task.

A completely different crew and FLS came in continue the work on Sunday. The second crew, while qualified, were not as experienced and had to get up to speed on the current status of the task without the benefit of a turnover.

**The specific challenge the MDO rule creates** is the unintended consequence of not completing the work on Sunday. I would have expected the SME’s to have completed this job on Sunday, had they

been available to work.

**Without the MDO rule**, the SME's would have completed the work on the next day while still adhering to the fatigue rules of not exceeding 72 hrs in 7 days. This would have resulted in returning the ARV to service one day sooner.

## MAINTENANCE PANEL DISCUSSION

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BRIAN PATRICK

MAINTENANCE MANAGER, COMANCHE PEAK

LUMINANT

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I want to discuss a recent example of a potential impact to safety related equipment. A crew of three qualified chiller technicians was on site on a Friday, which is a normal day off for maintenance, working on a non safety vent chiller. Towards the end of the day, the crew was notified by the control room that a safety chiller had tripped on high discharge temperature. The crew began assessing the problem and restarted the safety chiller. The apparent problem was discussed, but further troubleshooting was not able to be performed due to the crew being at the end of the shift. A few hours later the safety chiller tripped again on high discharge temperature. Another qualified chiller technician had been called out during the night to work on the chiller. Since there was no turnover, the chiller was out of service longer than it otherwise would have been. In this instance, the technician who was called out had worked around his house all day on his day off and was possibly more fatigued than the three technicians who had been on site.

The second instance involved the station service water traveling screen motor. During a refueling outage, one of the two service water traveling screens was taken out of service and completely replaced with new equipment. The installation was nearly complete. The only tasks remaining were termination of the electrical connections to the new motor, bump checking for proper rotation, and then rotating the chains to verify proper operation. Also, the work was in a high risk FME zone.

I arrived at the work area to perform an observation. The electrician would not have been able to complete all remaining tasks before the end of his shift. I witnessed the electrician physically referring to his watch to ensure he did not work past his scheduled time. He clearly was not focused on Safety, FME, and error prevention. I coached the electrician to slow down and focus on his task. The electrician was willing and able to continue the job, which would have required approximately another 15 minutes. I made the decision to let the next shift perform the terminations, which delayed the completion of the job and the availability of this safety related component. It also introduced more error traps due to turnover. The electrician was trying to minimize time the equipment was out of service. The importance of this example is the obvious focus that our employees are putting on the work hour rules when working on a job that requires their full attention. .

In summary, safety related equipment was out of service longer than necessary which increases risk.

As a response to Steve Phillip's example regarding challenges during planned EDG maintenance activities I stated:

In addition to planned EDG maintenance, emergent maintenance has an impact. During a recent failure of the an Emergency Diesel Generator GLC troubleshooting activities, a crew was called out to support, however, due to work hour rules they were not available to be called until 2:30 am the following morning. These types of examples pose an impact to future scheduled work.

## MAINTENANCE PANEL DISCUSSION

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MICHAEL MILLY

MAINTENANCE MANAGER, PRAIRIE ISLAND

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Good morning

I am Michael Milly the Maintenance Manager at Prairie Island nuclear station. I have 19 years of commercial nuclear power experience. I am responsible for all maintenance activities at the site.

Today I would like to introduce one example where maintenance activities were delayed in returning to service equipment because of MDO required breaks in personnel availability.

The example is a delay in the return to service of a heater drain tank pump. In this example, the unit was operating at reduced power to support required turbine valve testing, and condenser water box cleaning. Two of the unit's three heater drain tank pumps are operating normally.

Maintenance was scheduled on both operating heater drain tank pumps during the down power. This maintenance was to do minor cleaning and replacement of speed control brushes. The third motor was being removed due to a high vibration condition and sent off site for repairs.

As the first heater drain tank pump motor is removed from service as part of the down power sequence, the brushes were removed for inspection and replacement. During this motor inspection, the brush slip rings are found to be scored (burned) and scratched. One of the brushes is found to be worn away and the braided lead is arching on the slip ring. This material condition issue requires the motor to be removed for disassembly and slip ring replacement. The motor is repaired and re-installed as the unit is ramped back up in power after completion of the condenser waterbox cleaning and turbine valve testing. At approximately 95% power, this motor with new slip rings is put into service. As the motor is started, no speed indication is received at the control room or the local control panel; however, the motor is physically observed to be running at full speed. Stroboscopic inspection revealed the motor was running at full speed with no speed control either remotely from

the control room or locally.

In this particular configuration, maneuvering the plant would be extremely difficult, because the pump with no speed control was supporting most of the heater drain load. The decision was made to install another pump in the location of the pump that was removed for the vibration issues, but the plant because of the increased potential for a plant transient or trip, the plant was held at 95% power.

The electrical installation of a new motor includes calibration of the motor speed control unit to the new motor and amplispeed drive. During this calibration, several components were found to be out of tolerance or failed.

The calibration consumed a large number of electrical resources as work progressed. The qualified electrical craft were all used in support of the work, but by Sunday evening, all craft were in a condition that required they not work due to the rule required time or days off. The craft had to be given time off or had delayed starts to support the rule.

This meant that equipment would not be returned to service in a timely fashion and operations would be required to operate with the heater drain tank system in a less than optimum manner. As stated earlier maneuvering the plant in this condition is not preferred.

If the MDO requirement were not in place or the enforcement discretion requested were granted, qualified electrical resources could have been deployed to complete the calibration and correct the speed control issues on Sunday. The motor was returned to service on Monday night at approximately 1030. This represents a delay of approximately 24 hours.

In preparation of this meeting, I had the opportunity to speak with a number of peers representing many operating plants and know that the examples given are only a small fraction of the delays and un-intentioned impacts of the current rule structure.

In addition to the equipment and human performance examples that you have already heard, Janice is going to describe the impact to supervision and human performance.

Thank you, for your time and consideration.

## MAINTENANCE PANEL DISCUSSION

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JANICE KUNZ

I&C SUPERINTENDENT, BEAVER VALLEY

FIRSTENERGY NUCLEAR OPERATING COMPANY

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I am Jan Kunz, I&C Superintendant from First Energy Beaver Valley Power Station a two unit PWR. I have 30 years experience as a Technician, First Line Supervisor and Superintendent.

I wanted to take a few minutes today to discuss some of the generic human performance challenges we are seeing as a result of the MDO requirement portion of the fatigue rule.

One of the goals of the MDO in fatigue rule was to increase the quality of life for the individual worker

At BV before the rule, Maintenance worked a 5 day 8 hour shift which included a ½ hour unpaid lunch.

With the implementation of the fatigue rule, BV changed to a continuous 8 hour shift, with no lunch break.

The reason for the change was because of the MDO requirement which increases when work hours reach an average of 9 hours.

The elimination of the lunch break is perceived by the worker as a reduction of the quality of his/her work day since he or she has no definitive break time which could result in increased fatigue and lead to human performance errors.

Supervisors are challenged with emergent work while maintaining compliance with the fatigue rule  
MDO

Before the rule, Supervisors concentrated on troubleshooting the emergent equipment issue or planned the execution of the work.

Since rule implementation, the first consideration for supervisors is to find the person who is available to work, not always the system expert. The shift of focus on who can work involves substantially more time than more the rule because a computer program must be used to find the person who can work.

MDO Limits ability to send Maintenance crews to JIT training with Operations

In the past, Maintenance and OPS would attend JIT training together to practice a plant

evolution and Maintenance. An example is maintenance on a controller on the heater drain tank level pneumatic instruments which requires a power reduction to perform the work.

This just in time training has accomplished alignment and understanding between OPS and Maintenance and has been effective in identifying boundaries for the work in the field and trip criteria in the control room

MDO Limits the ability to have Maintenance attend IPTE briefs with Operations is during outages

A member of the Operations panel talked about a typical IPTE briefs for a PWR during outages of reducing inventory by draining to the flange to affect refueling.

In the past, the I&C crew who calibrated and assembled the temporary level instrumentation would be in the IPTE brief with Operations.

Now with outage fatigue rule requirements of Operations at [3 in 15] and Maintenance [one day off per week] this difference often means that test lead manager conducts separate briefs. Therefore reducing the effectiveness of the briefs and allows misunderstanding to exist between the two departments.

## VENDOR AND UNION PANEL

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GREG HALNON

DIRECTOR, REGULATORY AFFAIRS

FIRSTENERGY CORPORATION

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### Panel Opening Remarks

Greg Halnon- Director Regulatory Affairs, FirstEnergy- involved with task force for about 4-5 years.

This is about mid-point of the panel discussions and we will speak from a different angle.

- Re-emphasize and clearly articulate a key point.
- Many have spoken to the complexity of the rule
- Only 2 significant differences that changed
  - Minimum days off and all the requirements surrounding MDOs
  - Restricted use of waivers
- We had ceiling limits with GL 82-12 but there was free use of waivers
- We had break limits for the most part in our labor contracts
- The point is- the root of all this evil is the MDO requirement.
- But it is not all negative.
- As Mr Lash mentioned in his opening remarks- if we had not abused the previous limits, we may not be sitting here today.
- This panel represent the individuals working for vendors and the individual union members.
- Introduce members-
- Scean Cherry- Director of Labor Relations for DZNPS
- Dave Mullen- International Representative of the IBEW
- Pete Defilippi - Manager Access Programs for Westinghouse
- Dave Balas- Manager Global Outage Support Operations

Terms you have heard to this point--

- Rigidity
- restrictiveness
- disrupted personal lives
- Main issue is unpredictability:
  - work schedule (filling in for MDOs)
  - income directly relates to quality of life
  - most important- rest time.
    - Cascading effect going deep into the shift cycle- a plant problem early in cycle easier to handle, however pool of available workers gets more restrictive the deeper into the cycle.
- Also- the general workforce demographics is being affected-
  - may be predictions- but from knowledgeable people who are in the business of doing just this- business strategic planning
- Finally- the global outage message is a little different, Dave Balas will help frame that message to reinforce the MDOs restrictiveness.

Panel Closing Comments:

As you can see, predictability and consistency in the rest time is key for people planning their personal lives and activities.

Additionally, the general disruption in the harmonious working relationships:

- Peer-to-peer
- Worker-to-management
- Home life

Tends to distract the workforce

Early in shift cycle- the labor contracts govern due to less restrictive MDOs. As the shift cycle continues- the fatigue rule begins to govern through restricting the available pool of resources, trumping the contracts.

When we speak of the disincentive to participate in covered work, add in:

- new builds where for stability in living conditions may be measured in years rather than outages
- economic recovery where construction outside of nuclear industry will increase

- the aging workforce- where in 5-7 years we expect a 50% retirement of the experienced workers who are most likely to be qualified to do covered work

The rule issues transcend the entire industry as evidenced by what you have heard and that the vendors who touch nearly all of the licensees in one way or another, experience the same issues.

The overall effect of a rested and undistracted workforce is a better safety focus.

## VENDOR AND UNION PANEL

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PETE DEFILIPPI

MANAGER, ACCESS PROGRAMS

WESTINGHOUSE

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### Comments by Peter J. Defilippi

- 1) Introduction of Presenters
- 2) Appreciation on behalf of Westinghouse for opportunity to comment and provide observations regarding unintended consequences of the Work Hour control requirements.
- 3) Overview of the company and involvement with Fatigue Management
  - a) Westinghouse is a major vendor in the industry providing field service personnel to support maintenance activities to nuclear customers worldwide in the area of reactor cavity, primary and secondary side services, and engineering services.
  - b) As a contractor/vendor in the industry Westinghouse services are based on contractual arrangements which dictate among other things resources, schedule, and work hour controls including required MDOs.
  - c) Westinghouse work at nuclear utilities is primarily conducted during “off-line” periods, with some exceptions for fuel health inspections. Therefore, Westinghouse anticipated that the MDO requirements would be solely “one day off every 7 days”. This was fairly consistent with earlier application of the 82-12 guidelines on work hours absent the availability of frequent waivers.
  - d) Consequently, many of the concerns you have already heard today had the potential to impact Westinghouse personnel and services.
  - e) I represented Westinghouse by participation on an NEI task team providing input to the NRC in the development and promulgation of the fatigue management and work hour controls.
  - f) In anticipation of the rule publication, Westinghouse acted proactively and developed Fatigue Management procedures and organizations to address employee education and training, work hour control policies and procedures, and the purchase and incorporation of software applications to assist in the scheduling and control of work hours consistent with the regulatory requirements.
- 4) Key Observations

a) Unpredictability

- i) Westinghouse experienced varying interpretations of the work hour controls with each nuclear power station as we began the Fall 2009 outage season. These interpretations primarily focused on the “covered vs. uncovered” categorization of various positions and work crews. For example, a worker conducting services at one site was considered “covered” and then when moving to an assignment at another facility conducting the same work was now determined to be “uncovered”. These differing interpretations caused schedule challenges, resource planning uncertainties and inconsistent planning further compounded by worker confusion and disruption. Many of the interpretations were in contrast to the training and education provided based upon the Westinghouse and industry overall interpretations of the rule. It is only conjecture that these varying interpretations were due to the complexity and rigidity of the work hour control requirements particularly the MDO requirements.

b) Maintenance vs. Operations

- i) Early industry and Westinghouse interpretation of the rule language indicated that Westinghouse field service personnel designated as “covered” workers would fall into the Maintenance category. Approximately two months prior to the rule implementation, the industry debated with the NRC the interpretation that fuel handling personnel would fall into the Operations category as opposed to Maintenance. This late breaking interpretation caused impact to Westinghouse for the fuel handling personnel primarily manipulator crane operators. Due to change in designation, these latter personnel would now require a minimum of “3 days off in a rolling 15 day period”.
- ii) This change in interpretation resulted in two adverse reactions by the impacted fuel handling workforce.
  - Manipulator crane operators were the more experienced and qualified workers in the workforce. These workers were discouraged that after years of experience and obtaining qualifications they were now being impacted by less work availability with a potential for financial impact.
  - Likewise, less qualified workers seeking additional qualifications to possibly support promotional opportunities for the more qualified positions began to reconsider advancement due to the more restrictive work availability and financial gains.

## VENDOR AND UNION PANEL

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DAVE MULLEN

INTERNATIONAL REPRESENTATIVE, UTILITY DEPARTMENT

IBEW

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My name is Dave Mullen and I am an International Representative for the IBEW, working in the Utility Department. The IBEW represents approximately 15,000 permanent workers in almost 2/3 of the nuclear plants across the country. Additionally we represent thousands who work in all the plants during outages.

The implementation of the MDOs has created several unintended consequences. While it is true we must abide by the CFR, as the rule was being written we saw the collision course the rule was going to have on our negotiated contracts, like two trains headed for each other.

This is evidenced by the increase of union grievances. Over an additional 1,000 grievances have been filed because of the rule with over 45% of those are either directly or indirectly attributed to the MDO portion of the rule.

This has created much frustration with our members. They are frustrated with the supervisor who tells them they are not allowed to work because of the MDOs. To those workers, the supervisor is the face of the rule.

Because of the differing MDO requirements from department to department there is worker to worker frustration. Some workers are now working more than their fellow worker.

Some workers have personally told me they want to change departments because of the MDO requirement because of the financial harm this is causing them. It affects not only their weekly earnings but also long term their negotiated pensions.

Some workers have even expressed a desire to leave the industry.

The predictability of the MDOs is also causing issues. For example, one worker was scheduled to have 3 consecutive days off to meet the rule. He was then scheduled to work overtime his third day off. Therefore he scheduled personal business such as doctor's appointments and mortgage signings on his MDO. But because of plant conditions, lack of available personnel to work because of MDOs he was forced to work his first day off instead. This caused him to cancel his personal business obligations. He became a distracted and frustrated employee.

Another unintended consequence occurred during a recent outage. In order to comply with the MDO requirements, employees worked a schedule with a rotating day off. The direct result of this was an increase of absenteeism of 15%. The negative impact created was a lack of consistency on jobs as workers were moved from crew to crew to fill the vacancies created. This resulted in jobs taking

longer to complete. It also created a distraction for the supervisor as they had to spend valuable oversight time adjusting the crew makeup.

There is also a negative financial impact for our workers. With rotating days off to accommodate the MDO requirement, workers miss opportunities they had before to work shifts paid at a premium rate of pay. This creates worker to worker animosity and morale suffers.

The IBEW has fought long and hard for an 8-hour work day. The MDO requirement and the fewer employees who are now available to work overtime is driving our members to a 12-hour shift. A 12-hour shift works better for MDOs. However this is contrary to union beliefs. It is so much so that the IBEW requires a 75% super majority vote from the workers to work a schedule containing something other than 8-hour shifts.

## VENDOR AND UNION PANEL

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SCEAN CHERRY

DIRECTOR, LABOR RELATIONS

DAY & ZIMMERMAN

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The minimum days off requirements has caused confusion in the field amongst the craft workers. Typically work schedules are interrupted and craft workers are left wondering if such an abrupt change in the work schedule has violated any laws (FLSA or NLRB) or the collective bargaining agreement. Furthermore, the craft workers' pay for the week is may be impacted in the negative due to the shortened work week hours. Less pay can be particularly troublesome for workers who travel to outage projects from out of town. These factors combine to impact morale and potentially affect the workers focus on the task at hand which in turn could lead to human performance issues. The minimum days off has added another layer of complexity to the process of working at a nuclear power generation faculty. This could negatively impact the interest and willingness of craft persons to work nuclear maintenance under the new fatigues rules further exacerbating the pending manpower shortage in the utility facility maintenance industry.

### 1. Managing MDO w/ Collective Bargaining Agreement Terms

- GPPMA – Bulletin 27 Created
- Issues Continue; Discontentment with Scheduling
- Worker to Management Relationships
- Peer to Peer Relationships
- Quality of Life – Low Moral – Human Performance
- Grievances Increase – Distracting to Worker & Management

### 2. Added Layer of Complexity

- Complex Nature of Working Nuclear
- MDO – Additional Complexity
- Uncertainty in Time Off & Rest Time
- Unpredictable Pay
- Nuclear Work Less Attractive
- Pending Worker Shortage within 5 to 10 years

## VENDOR AND UNION PANEL

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DAVID J. BALAS

MANAGER, GLOBAL OUTAGE SUPPORT OPERATIONS

WESTINGHOUSE

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### **Comments by David J. Balas**

- (1) My team is responsible for work hour controls in field operations.
  - (a) Build schedules in our software based on input from the project manager.
  - (b) Make major modifications to schedules based on outage schedule changes and customer rule interpretation.
  
- (2) The implementation of the rule during the Fall 2009 outage season was significant to the industry and occurred during our largest outage season to date.
  - (a) Westinghouse had 241 projects in the field, and nearly 6500 positions to support these projects.
  - (b) The ruling regarding refuelers as Operations instead of Maintenance two months prior to implementation taxed the organization and placed projects at risk.
  
- (3) Maintenance category workers expressed satisfaction with work hour controls post outage due to one day off per week. Personnel feedback - "I feel like I was not beat up this outage season". The predictability of the schedule was positive and was driven by the elimination of waivers. This reinforces Greg Halnon's opening remarks regarding the misuse of waivers under the 82-12 guidelines.
  
- (4) In summary, "One day off per week works!"

## SECURITY PANEL

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JIM SPINA

VICE PRESIDENT, CORPORATE SITE OPERATIONS

CONSTELLATION

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### Opening Remarks:

- Introduce yourself as corporate VP responsible for CENG sites, including security programs
- My panel will discuss the impact of the Fatigue Rule on nuclear security programs across the industry
- What you will hear is that these impacts are similar in many ways to those just described by the operations and maintenance panels, but some are unique to the business of providing physical protection to our nuclear power plants
- The key messages we hope to deliver to the staff today are that:
  - The fatigue rule as currently written and implemented has had an adverse impact on our ability to train, qualify, and maintain the proficiency of our security work force. By its very nature, this is contrary to nuclear safety;
  - The complexity and rigidity of the rule has led to a reduction in the amount of oversight our security supervisors can provide to the security force on shift, due to the many hours required instead to administer the program;
  - Hiring more security officers and staff or spending more money are not solutions, as we will show you we have already significantly increased staffing and funding in recent years, including specifically for implementation of the fatigue rule; and
  - The fatigue rule was not needed to resolve the issue seen in the past regarding security officer fatigue or inattentiveness. We responded those issues through more effective means long before the advent of the new rule.
- Introduce the panel: With me today are-
  - Dr. Mark Findlay, General Manager Nuclear Security for the Tennessee Valley Authority. Mark brings the perspective of someone responsible for implementing and managing compliance with the fatigue rule for a fleet of nuclear power plants with a common security program.
  - Ron Owen, Senior Security Supervisor at Entergy's Fitzpatrick station, will provide the perspective of a first line supervisor whose responsibility has been to manage

compliance with the MDO element of the rule, while ensuring the station's defensive strategy is effectively implemented.

- Finally, Erik Erb, Security Officer at Constellation's Nine Mile Point station, is a covered worker under the rule, and brings the perspective of someone most directly impacted by the MDO requirement. In addition, Erik has special standing here today as an individual petitioner for rulemaking on this matter.
- Also with me today are members of my corporate management staff at Constellation, Bruce Montgomery, Manager - Nuclear Safety and Security, and Mr. Pete Crinigan, Director- Nuclear Security.
- With that, I'd like to turn the discussion over to Dr. Findlay....

### Closing Remarks

In closing, we believe we have presented arguments that:

- Our ability to train is negatively impacted, including the ability to pursue excellence in programs to improve the proficiency and capabilities of our officers to meet today's real threats.
- Furthermore, the time required to retrain the entire workforce has increased under the rule, impairing our ability to rapidly adjust to new threats.
- As an executive entrusted with the responsibility of protecting public health and safety, these two impacts alone concern me greatly. In addition, the rule distracts our security shift supervisors from their primary duties of: (1) focusing on the state of his/her shift workers and (2) continuously verifying that the defensive strategy is effectively being implemented at the station.

## SECURITY PANEL

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MARK FINDLAY

GENERAL MANAGER, NUCLEAR SECURITY

TVA

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- Good afternoon, I am Dr. Mark Findlay the General Manager, Nuclear Security for the Tennessee Valley Authority
- I have a doctorate from the University of South Carolina in Organizational Leadership and Criminal Justice
- I am responsible for the security of TVA's nuclear fleet including 6 active reactors and 3 additional reactor locations presently under construction.
- I have over 28 years experience in the nuclear industry in security, AA/FFD and emergency planning.

**I would like to highlight the Impact the Fatigue Rule has on drills and exercises, annual qualifications for security responders and development of these responders.**

- Due to the complexity of the drill and exercise scenarios the industry has found the best controllers for monitoring and controlling these scenarios are the same security personnel who would fill them as responders. Due to this we have Security Officers filling roles as both players and controllers during drills and exercises. Due to the new drill requirements contained in 73.55 which no longer allows drill credit for responders acting as a controller, we are required to run more drills (quarterly and annual) impacting the number of hours and days our officers have to work. Because of this many in the industry have cut the number of drills back to a minimum. Also the practice of performing multiple drills exploring the adequacy of our defensive strategy in a single evening has been greatly reduced due to the minimum days off restriction.
- Additionally in the past our officers have also supported other sites internal and external to our fleet. This was a beneficial practice in exposing our responders to new and possibly better tactics and controlling techniques. Because of the fatigue rule's minimum days off restriction this activity has been greatly reduced and is mostly non-existent.
- It should be noted drills are conducted on days off which is impacted through the minimum days off requirement.
- Because of no flexibility within the fatigue rule in the hours worked continuously 10 hour minimum between shifts worked and minimum days off, drill critiques are being cut short or key players dismissed prior to the completion of the critique after reaching their limits. Just recently this was seen at Watts Barr FOF.
- Because of the work hour restriction impacts mentioned above and with no credit for controlling drills TVA runs 6-8 full-scale annual drills to meet the requirement of multiple qualifications. This further limits the available time to develop the security force beyond their minimum required skills.

## **Training/briefings**

- Training is conducted on days off which limits the number of times training can be conducted due to the restrictions of minimum days off. This then promotes only training on minimum requirements supporting requalification. Advance skills training such as weapons handling and threat identification and response are being cut from training programs.
- A negative consequence from the minimum days off and work hour restrictions Just-in time training for areas such as HU, Safety or threat information briefings is being provided this training at shift briefings or through read and signs. This then distracts from the primary mission of a shift briefing in preparing the security officers for shift.
- In the past the industry has found it very beneficial in sending security responders on benchmarking trips to other sites exploring their best practices. It was always better to have the individuals who would be doing the job evaluating the benefits of bringing it back to the site. As a result of the minimum days off restrictions, benchmarking opportunities for individuals covered under the fatigue rule is very limited and when performed are no longer performed by covered security personnel.
- I want to impress upon you, the solution is not as easy as hiring more security personnel. The hiring of more security responders compounds the issue in it adds more training and drills to the whole organization and you will rapidly reach a point of diminishing returns. Since Sept 11, 2001 TVA has hired an additional 300 security officers of which 180 were hired to cover the fatigue requirements.
- Clearly 3 or 4 years ago the industry was experiencing an increase in the identification of inattentive security responders. I am sure you will agree this situation has greatly improved but not due to the fatigue rules. The impact seen is due to the defense in-depth the industry has implemented to include more radio checks, post visits, increased post rotations, policies allowing for use of attentiveness aides at post, just to name a few.
- In summary, training my security force is the most important aspect of my program as it is directly proportional on how well we can protect the health and safety of the public. I believe the minimum days off restriction has reduced my ability to provide beyond the minimum training to my security force and has negatively affected my ability to further develop them in advance tactics and techniques. I use to have a course on advanced weapons handling which I am no longer able to conduct. Also the open range days where officers could come in and get help on becoming better marksman has been discontinued.

**Now I would like to introduce Senior Security Supervisor Ron Owen from Entergy**

## SECURITY PANEL

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RON OWEN

SENIOR SECURITY SUPERVISOR

ENTERGY

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Good morning, I am Ron Owen, Sr. Security Supervisor at Entergy Nuclear. One of my key responsibilities is for the implementation and oversight of the Fatigue Management Program in the Security Department at the James A. Fitzpatrick Nuclear Power Plant. I have been at James A. Fitzpatrick Security since 2001 as a Shift Supervisor, Sr. Training Instructor, & Access Authorization/Fitness for Duty Supervisor. In that time I was responsible for the implementation and tracking of the 2003 Security Work Hour Controls at JAF, as well as implementation of the NRC Training and Qualification order. Additionally, I have trained onsite personnel in the Behavioral Observation Program which is designed to monitor the well being of site personnel on a daily basis to include fatigue.

Some of the unintended consequences on a Shift Supervisor because of the MDO are:

- Time spent verifying data and filling overtime call-ins takes approximately 3 hours a shift. Each officer must be checked in the program prior to being offered over time to ensure MDO are met. Officers that are not eligible to work cannot be called, or asked on shift if the overtime is later in the week. This means the supervisor spends many hours going through the call-out list until someone answers and either accepts the over time or is forced to work.
- Watch tours, observations, and general face-to-face time are reduced due to this effort. Oversight is an important part of the Security Supervisor duties; lack of this oversight could potentially lead to a safety or regulatory related issue. The potential to identify actual fatigue of an officer is reduced as well.
- Additional limited scope tactical training drills that are used to test and sharpen the security officers' knowledge and skill have been reduced since the implementation of the rule. Our Supervisors previously created 4 separate 3" binders' worth of drill paperwork in a single year. These additional drill opportunities enhanced the knowledge and effectiveness of our officers in the event of an actual contingency. This has been reduced to one binder of regulatory required drill paperwork due to the reduced amount of time the Supervisor has to spend in the field.

The rule is complex to the point that only a tracking database can calculate the required breaks and days off. If the database goes down there is almost no way to verify eligibility for overtime.

Example: During IT work on the system server over a weekend, our fatigue program was inadvertently disabled for 14 hours. The Supervisor on shift needed overtime and contacted officers at home to ask who had reported to duty on their days off and if so how many additional days they

had worked. The officers who could not recall were not offered. We entered the hours worked when the program was available and did not know until then that there was no violation.

The rule allows for an officer to work 2 of their days off over the 4-week shift cycle to maintain the MDO rule. These days are generally utilized to complete annual training evolutions. This limits the officers potential for call-in over time. While some officers are ready, willing, and able to work - the rigidity of the rule requires that we force individuals who do not want to work overtime. This has a negative effect on Security Officer moral.

Example: Our officers receive a seven-day break once every 4-week cycle. A Security Officer contacted me last week and asked why he could not work any of his upcoming seven-day consecutive break. He felt there must be something wrong with the fatigue-tracking program as he had only worked 2 of his days off over the last 3 weeks, an 8-hour day and a 10-hour day. He went on to state that he knew people were being forced to work due to the security upgrades and he wanted to be available to support the site. I explained to him that he had reached the MDO for the cycle and would not be eligible for another week.

I believe the fatigue Minimum Days Off rule was not designed to deter this type of situation. This is an unintended consequence.

We also have strived to give our security officers additional voluntary firearms training to hone their skills. This is not possible with the Minimum Day Off Restrictions.

Our security force has increased by 105% since 2001, yet the regulatory required number has only increased by 80%. We currently have the needed amount of security personnel to run daily operations. Additional officers will not fix the problem, this would actually contribute to the issue, as these individuals would add to the number of officers to be trained and qualified.

Emergent plant needs, compensatory postings for security upgrades, and annual and just-in-time training do create necessary overtime. Utilization of our current security officers for overtime without the Minimum Day Off restriction will support this necessary over-time.

## SECURITY PANEL

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ERIK ERB

SECURITY OFFICER, NINE MILE POINT

CONSTELLATION

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Good afternoon. I'm Erik Erb and I'm a Nuclear Security Officer at Constellation Nine Mile Point and a covered worker under MDO. I have 6.5 years experience as a NSO, 5 years experience as a Brink's Armored Car Guard and had seasonal employment with the Cayuga County Sheriff's Department. I also petitioned the NRC to change MDO because of the unintended consequences it is causing. I received 91 signatures of covered security officers and supervisors alike agreeing with these unintended consequences. I am here today to discuss them and their impact and how enforcement discretion would help to solve them and I offer a ground level perspective.

Training and qualifications are being impacted. I want to be sure to make clear that all officers are still trained and qualified and all regulatory requirements are being met. However, it is becoming increasingly difficult to accommodate this training. Recently, Nine Mile Point purchased new pistols but the required training necessary to issue these pistols was postponed, because the necessary overtime required to fill slots in the schedule for officers in firearms training would create a situation where overtime would have to be forced. A base/Team Leader class was also postponed. For those that don't know, these are specialized duty officers, of which we have a limited number and need more, but again, we couldn't have this class without forcing overtime to cover these officers being in class for a week.

Another unintended consequence is that officers are seeking outside employment to attempt to make up for lost income from loss of overtime. These hours worked most likely would not be reported to licensees or tracked and this increases the likelihood of a fatigue issue, which is adverse to safety and security.

The rigidity and inflexibility of MDO appears to be causing forced overtime more now than before MDO. As an example, an officer I work with brother comes home 3 days per year, and unfortunately he was forced to work one of these days. Officers who don't want overtime are being forced and conversely, officers who want overtime are being restricted. Before MDO this was rarely the case. This, I believe, is the exact opposite of the objective of MDO. This is also creating morale issues for both officers who are being forced and the opposite, officers who want overtime being restricted and this certainly impacts the quality of life of these affected officers and overall the moral of the department. This can be adverse to safety and security.

The fatigue software, Empcenter, that Constellation uses is a single point vulnerability in that if it were ever to crash and not be restored in a timely manner, it would be exceedingly difficult to figure work hours and MDO compliance long hand and the accuracy would be questionable at

best. Prior to MDO, I could figure my hours by pen and paper in minutes, and now because of the complexity of the rule, I would have much difficulty figuring my hours. Empcenter requires my foreman and supervisor to run every officer through to determine their availability. This daunting task sometimes ties them up for hours, diminishing their ability to assess the daily activities and security force, which again is adverse to safety and security.

Fatigue concerns and countermeasures were already in place before MDO. They include post rotation, periodic communication alert checks, annual computer based training on fatigue, its causes, how to recognize it in yourself and others and countermeasures. Also, off-hour and backshift inspections by QA have been implemented.

In closing, I feel we at Nine Mile Point are sufficiently staffed presently. However, MDO is causing us to not be able to use our security force to its full potential and capacity. I understand why MDO was created and what factors brought about its implementation and what its intended objective is. However, it has caused many unintended consequences that are impeding security's ability to efficiently carry out its day to day activities. Simply put, as it's currently written and enforced, MDO simply is not working.

I believe enforcement discretion would do much to alleviate these unintended consequences and negative impacts MDO is causing while still ensuring that other work hour controls are being observed and enforced. Further, I believe there is common ground that the commission and the industry can come to and agree upon.

Thank you for your time and consideration.

## INDUSTRY CLOSING REMARKS

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DAVID HEACOCK

PRESIDENT AND CHIEF NUCLEAR OFFICER

DOMINION GENERATION

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- Good afternoon. I am David Heacock, the President and CNO of Dominion Generation.
- I appreciate your patience over the past X hours listening to multiple examples of the unintended consequences to the current Part 26 Work Hour Rule.
- On a policy level, the NRC and the industry share the same goal, to make sure that our workers can safely perform their duties without being fatigued. What we have been discussing today is a simpler method to insure that this happens with the least amount of burden to those charged with compliance.
- The proposed Part 26 rule change and Enforcement Discretion address the Minimum Days Off portion of the rule. Simply stated, the industry is not looking for relief from the number of hours worked, we are looking for relief from the excessive burden contained in the current rule to document that workers are not fatigued. By staying below the work hour ceilings and the minimum breaks, we can ensure that workers will not experience acute fatigue during outages. By staying below an average of 54 hours per week during non-outage periods and minimum breaks, we can ensure that workers will not experience cumulative fatigue.
- We believe that the enforcement discretion that we are requesting is the best method to manage fatigue. We can avoid the hours spent by supervisors to call in a single worker to perform emerging work. I have heard some folks say that the industry should simply hire more workers and this problem would go away. This conclusion is not accurate. You do not build a church to accommodate the Easter Sunday crowd and you do not hire workers to accommodate the highest workload that you could ever imagine. In fact, the industry has steadily reduced the backlog of important, Safety Related work – this is a strong indication that the industry has employed the proper number of qualified workers. On occasion, we have a need for work to be accomplished while our workers have the day off. We need to be able to call in workers in a reasonable time frame to take care of these problems.
- As a result of the current work hour rule, the industry has received a large number of grievances due to the changes we have made in how we have to analyze and call in workers or ask them to stay past their normal work period. Even though these grievances do not directly impact the safety of the plants, they do take a considerable amount of time for the worker, the union representatives, the supervisor and the management team to prepare for and hear each of these issues. This is time that could be put to better use.
- The itemized approach that the staff is proposing would further complicate a very complicated rule. I am a nuclear engineer and I find this rule very difficult to comprehend and follow. This

approach would also exempt certain hours, such as for shift manager meetings from being counted up to some maximum number of hours per week or month. This would actually have a negative impact on the number of hours being worked and would add even more accounting. The simple solution is the best solution; eliminate the MDO requirements in accordance with the proposed rule and enforcement discretion.

- In closing, I ask you to seriously consider all of the examples that we have provide today by people that have to live with this rule each and every day. The industry believes that the proposed rule and the enforcement discretion will result in an improvement in safety and should easily meet the enforcement discretion threshold. Any piecemeal or itemized approach to addressing the problem in the interim only makes the problem worse and would have a negative impact on safety. This itemized approach only addressed the symptoms and not the root cause of the issue. The industry can ensure against worker fatigue adversely affecting public health and safety and the common defense and security by implementing the enforcement discretion at the earliest possible time.