

March 9, 2000

MEMORANDUM TO: Cynthia A. Carpenter, Chief  
Generic Issues, Environmental, Financial  
and Rulemaking Branch  
Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation

FROM: /s/ Peter C. Wen, Project Manager  
Generic Issues, Environmental, Financial  
and Rulemaking Branch  
Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation

SUBJECT: SUMMARY OF FEBRUARY 23, 2000, MEETING WITH  
STAKEHOLDERS ON NRC'S REASSESSMENT OF THE  
COMMISSION'S POLICY ON FACTORS CAUSING FATIGUE OF  
OPERATING PERSONNEL AT NUCLEAR REACTORS

On February 23, 2000, a public meeting was held at the Nuclear Regulatory Commission (NRC) offices in Rockville, Maryland. The participants included members of the NRC staff and representatives from the Nuclear Energy Institute (NEI), the Institute of Nuclear Power Operations (INPO), the Professional Reactor Operator Society (PROS), the Union of Concerned Scientists (UCS), and the author of a petition to amend NRC regulations on matters related to the subject of the meeting. Attachment 1 lists attendees at the meeting, and Attachment 2 contains the meeting agenda.

The meeting was held to discuss concerns related to the Commission's Policy on Factors Causing Fatigue of Operating Personnel at Nuclear Reactors and to provide stakeholders an opportunity to provide input as the staff reassesses the Commission's policy and evaluates alternatives for addressing fatigue-induced impairment of personnel performing safety-related functions. Following opening remarks by Jon Johnson, Associate Director for Inspection and Programs, Office of Nuclear Reactor Regulation (NRR), the staff provided an overview of the policy and current issues associated with the policy. The staff's presentation materials are provided as Attachment 3. The staff noted that whereas few events at U.S. nuclear power plants have been specifically attributed to fatigue, other sources of information, including inspection findings, allegations, and results from a survey conducted by PROS, indicated that work scheduling practices at some nuclear power plants may not be consistent with the Commission's policy or with good fatigue management practices. The staff also described the current policy as being focused principally on working hours, as not being responsive to other fatigue-inducing factors, as not being responsive to plant risk and risk insights, and as being difficult to implement and enforce because key terms of the policy have not been defined.

Following the staff's presentation, the participants provided the following comments:

- NEI questioned what specific issue the staff was proposing to address, noting that few events have been attributed to fatigue. NEI stated that their experience has been that most fatigue issues that licensees identify are caused by non-work-related issues. NEI also stated that, in general, human performance issues are very difficult to address and tend to be best addressed through approaches such as increased management oversight.
- PROS stated that they did not support the petition for rulemaking currently being reviewed by the staff, that proposes enforceable limits on the working hours of plant staff performing safety-related work. PROS believes that it is up to the individual operator to know his or her limits and to not work when fatigued. PROS also stated that they believed that effective use of error reduction techniques would be more effective than working hour controls to prevent fatigue-related errors.
- INPO presented performance indicator data that they stated indicated that the industry as a whole was not experiencing any significant safety problems as a result of human performance initiated events. INPO stated that they had reviewed the causal factors in their significant event reviews and found no events in which fatigue was a causal factor. INPO also stated that interviews they had conducted at nuclear power plants since June 1999 have not found fatigue or working hours to be a significant concern.
- Mr. Barry Quigley, who has petitioned the NRC to amend 10 CFR Parts 26 and 55 to address concerns related to plant personnel fatigue, stated that there was a large disparity between licensees in how they managed working hours and matters related to personnel fatigue. He stated that individuals at one plant were forced to report to work after stating that they were fatigued. His assessment of the NRC policy was that it appeared to provide appropriate high level guidance but that in practical implementation, the policy's wording allowed for differences in interpretation and abuse of overtime. He noted that work performed by other groups and agencies, such as the National Transportation Safety Board and the National Aeronautics and Space Administration, would be useful in assessing personnel fatigue in the nuclear industry. Mr. Quigley stated his belief that fatigue is frequently not identified as a causal factor during event reviews because the root cause assessments are often not conducted to that level of detail.
- UCS described research that addressed the relationship between the number of hours an individual is awake and impairment and stated their belief that the NRC should be treating fatigue as a fitness-for-duty issue. UCS noted that in contrast to the NRC policy, personnel working hours in various transportation industries are controlled by regulation. UCS expressed concern about the NRC policy for allowing greater use of overtime when a plant is shutdown, noting that errors made during outages may not become evident in equipment performance until the plant is operating. UCS also indicated that some licensees issue blanket authorizations for overtime during outages, thereby suggesting that they interpret the policy guidelines as not being applicable to outages. UCS stated that the NRC has identified an example in which a licensee's

employee did not record working hours to avoid recording hours in excess of the NRC's policy guidelines. UCS also stated that not volunteering to work overtime at one nuclear power plant was equivalent to volunteering for the next round of staff reductions at the site. UCS stated that it supported the petition by Mr. Quigley to amend 10 CFR Parts 26 and 55.

Following the presentations by the meeting participants, the staff invited the participants to propose future actions to address the issues raised at the meeting. PROS suggested that the policy guidance be reviewed to determine better approaches for controlling working hours for 12-hour shift schedules. Mr. Quigley proposed a review of methods for directly assessing fatigue. NEI observed that there appeared to be a consensus that some form of guidance was needed. NEI also stated that the issues appeared to be: (1) the adequacy of the current policy guidelines, (2) the ability of the NRC to enforce the guidelines, and (3) the relationship of fatigue to 10 CFR Part 26.

The staff concluded the meeting by stating that information presented at the meeting would be reviewed in formulating future staff plans for reassessment of the policy.

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OPA

**NRC/STAKEHOLDERS MEETING ON FACTORS CAUSING FATIGUE OF OPERATING  
PERSONNEL AT NUCLEAR REACTORS  
LIST OF ATTENDEES  
February 23, 2000**

<u>NAME</u>	<u>ORGANIZATION</u>
Jon Johnson	NRR
Bruce Boger	NRR/DIPM
Chris Christensen	NRR/DIPM/IOLB
David Trimble	NRR/DIPM/IOLB
Dave Desaulniers	NRR/DIPM/IOLB
Garmon West, Jr.	NRR/DIPM/IOLB
Dick Eckenrode	NRR/DIPM/IOLB
Paul Lewis	RES/DSARE/REAHFB
J. J. Persensky	RES/DSARE/REAHFB
Ed Hux	INPO
Dave Lochbaum	UCS
Barry Quigley	Self
James Davis	NEI
Bob Post	NEI
David Flowers	PROS
Bill Everett	PROS
Carey Fleming	Winston & Strawn
Don Palmrose	NUS-LIS
Mareia Lesniak	Com Ed
Jenny Weil	McGraw-Hill
Deann Ralezl	Serch/Bechtel
Roger Huston	Licensing Support Services