



10 CFR Part 26 Regulatory Basis – Application of Fatigue Requirements to Security Officers at Category I Licensees

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Overview

- Background
- What is Fatigue
- Why is Fatigue a Concern
- How Other Industries Address Fatigue
- Officer Work Hours Sampled from 7 FCF
- Basis to Apply Fatigue-Officers at Cat. I FCF
- Conclusion



Background

- 4/29/03: NRC Issued Order EA-03-38 (fatigue/work hour requirements for security officers at reactors).

- 6/21/04: COMSECY-04-0037, Fitness for Duty (FFD) - Security Force Fatigue at Nuclear Facilities.
 - ▶ Staff developed Orders: fatigue/work hour requirements for security officers at:
 - Independent Spent Fuel Storage Installations
 - Category I Fuel Cycle Facilities (FCF)
 - Natural Uranium Conversion facilities
 - Decommissioned Reactors
 - Gaseous Diffusion Plants

 - ▶ Held 10 public meetings to obtain stakeholder input on draft Orders.



Background

- 9/1/04: SRM-COMSECY-04-0037, Fitness for Duty (FFD) - Security Force Fatigue at Nuclear Facilities.
 - ▶ Commission disapproved Orders.
 - *Staff should pursue rulemaking vice Orders for those facilities for which the staff believe fatigue-related requirements are necessary for the appropriate personnel.*
- 4/29/05: Commission progress report.
- 3/31/08: 10 CFR Part 26 (FFD Programs) was amended to impose fatigue requirements on reactor licensees.
 - ▶ The revision established a requirement for fatigue management.



What is Fatigue

- A degradation in an individual's cognitive and motor functions resulting from inadequate rest.
- Types of fatigue:
 - ▶ Acute fatigue.
 - ▶ Cumulative fatigue.
 - ▶ Variations in alertness and performance due to circadian rhythms.
- Characteristics that make security personnel vulnerable to fatigue:
 - ▶ Shift work during periods of low circadian alertness.
 - ▶ Work alone/dark setting/low activity.
 - ▶ Potentially long work hours performing tasks that require vigilance and sustained attention.



Why is Fatigue a Concern

- Degraded cognitive and motor functions affects human performance across a variety of tasks.
- Cognitive task performance is affected more readily by fatigue:
 - ▶ General cognitive fatigue decreases an individual's ability to remain alert, process complex information, and correctly grasp a complex set of circumstances such as:
 - React and make timely/conservative decisions to respond/interdict during a security event.
 - Work effectively as a team member.
- Degraded task performance by security personnel may jeopardize facility security.



How Other Industries Address Fatigue

- DOE Order 473.3: Protective force fatigue guidelines.
- TSA Management Directive No. 1100-33-1: guidelines for security officers.
- DOT: work hour controls on entities it regulates (e.g., air traffic controllers and flight crew members, commercial motor vehicle operators and railroad operators).
- National Institute of Justice: Many law enforcement agencies across the U.S. have implemented fatigue prevention programs.



Officer Work Hours Sampled from 7 FCF

- 2011/2012: Security officer work hours sampled.
 - ▶ 7 FCF sampled (2 Category I sites and 5 Category III sites).
 - ▶ Sites provided data on security officer work hours-2 month period.
 - ▶ Analysis: Compared frequency in which individual security officers at the site exceeded fatigue requirements in 10 CFR Part 26 and performed statistical analysis.
 - Analysis focused on instances exceeding the 72 hr/wk and 54 hr/wk, 6 wk rolling avg.
 - FCF are not required to meet fatigue requirements in 10 CFR Part 26.
 - ▶ Limitations of data:
 - Snapshot.
 - Level of detail not present to exclude work hours from total hours worked by security officers due to shift turnover, drills, etc. allowed per 10 CFR 26.205(b).
 - The presence of zero work hours in the data set due to employment fluctuations (e.g., resignations or new hires) may have skewed some results pertaining to staff determining weekly security officers work hour averages at the sites.



Basis to Apply Fatigue-Officers at Cat. I FCF

- Applied risk insights for a variety of potential malicious uses of SNM and the potential consequences from such malicious uses.
- Considered the role and function of security officers in meeting proposed protective strategies for the different categories of SNM.
- Reviewed incidence or concerns associated with security officers regarding fatigue at Category I FCF.



Conclusion

- Staff concludes that security officers at Cat. I FCF should be subject to the fatigue requirements in 10 CFR Part 26.
- Staff believes fatigue management measures are needed to provide high assurance that officers at these sites are fit and capable of executing their site security plan duties and meeting NRC requirements.