



# Fatigue Management and Part 26, Fitness for Duty Programs

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August 24, 2007

# Background

- 1982 NRC establishes policy on work fatigue
- 1999 An SRO petitions NRC to establish enforceable work hour limits for safety-related duties
- 2001 Staff reviewed adequacy and implementation of worker fatigue policy
- 2002 Commission approved rulemaking plan for reactors
- 2002 – 2005 NRC conducts 16 public meetings on draft requirements
- 2005 NRC publishes proposed rule
- 2006 Staff incorporates public comment in draft final rule
- 2007 Commission affirms draft final rule

# Worker Fatigue Incidents/Issues (Since 2000)

- 5 operators sleeping
- 1 STA inattentive
- 10 security guards sleeping
  - 2 instances of guards driving into barriers
  - 2 instances of both guards at a post sleeping
- 1 Chemistry technician sleeping
- 4 instances of inadequate OT control
- Continued self-declaration concerns

# Fatigue Degrades Critical Skills and Abilities

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

# Fatigue degrades fitness for duty



# Contributors to Fatigue

## Scheduling Factors

- Rotating shift schedules
- Long work days
- Early start/wake times
- Unscheduled overtime
- Extended periods of long work days without days off

## Staffing Factors

- Highly variable workload
- Ageing work force

## Task Factors

- High vigilance demands
- Low physical activity
- High attention to detail and cognitive demands

# Limitations of Current Regulatory Framework

(NRC Policy Statement and Unit Tech. Specs.)

- Undefined terms and advisory language
- Use of waivers not clearly limited
- Cumulative fatigue not effectively addressed
- Only addresses fatigue from work hours

# Subpart I, Managing Fatigue

## Major Provisions

- Work Hours Scheduling
- Work hour limits and break requirements
- Periodic performance-based assessments
- Training
- Self-declaration
- Behavioral Observation
- Fatigue assessments
- Annual reporting



# Work Hour Controls

- Work Hour Controls for:
  - Maintenance (Risk-significant only)
  - Operations (Risk-significant only)
  - Chemistry (Emergency Response only)
  - Health Physics (Emergency Response only)
  - Fire Brigade
    - (only workers responsible for knowing effects of fire & suppressants on safe shutdown capability)
  - Security Force (not including admin. workers)
  - Individuals who direct risk-significant maintenance & operations

# Work Hour Limits and Break Requirements

- Retain max. work hour limits of 16 hours in any 24-hour period, 72 hours in any 7-day period
- Increase max. work hours in any 48-hour period from 24 to 26 hours
- Increase min. break period between work periods from 8 hours to 10 hours
- Limit waivers to conditions necessary to prevent or mitigate conditions adverse to safety or security

# Minimum Day Off Requirements (Normal Operations)

Vary according to:

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

# Minimum Day Off Requirements (Normal Operations)

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

# Minimum Day Off Requirements (Plant Outages)

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

# Minimum Day Off Requirements (Plant Outages)

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

# Fatigue Management Training

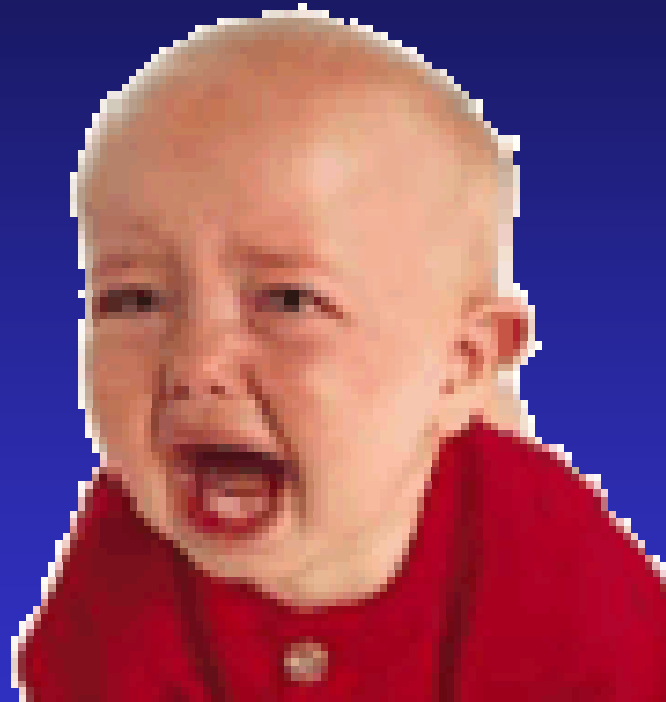
- Specified knowledge and abilities requirements
  - Fatigue prevention, detection, mitigation
  - Awareness of sleep disorders
- Can be part of FFD training
  - Initial and annual refresher training
  - Annual examination
- Applicable to all personnel subject to the fitness for duty program requirements

# Fatigue Assessments

- Fatigue Assessments
  - For-cause
  - Post-event
  - Follow-up
  - Self-declaration
- Applicable to all personnel subject to the fitness for duty program



“But I Don’t Wanna Work 7-12s!!”



Source: [Nukeworker.com](http://Nukeworker.com)

# Self-Declaration

A statement that you are not able to safely or competently perform your duties because of fatigue

# Self-Declaration

- Requires that licensee procedures describe:
  - Rights and responsibilities
  - Controls and conditions for permitting or requiring individuals to perform work following a self-declaration
  - Process to be followed if an individual disagrees with the results of a fatigue assessment

# Implementation

- Commission approved rule with limited changes
- Staff revising rule/package as directed by the Commission
- Industry developing implementation guidance
- NRC to endorse guidance through a Regulatory Guide
- NRC revising inspection guidance
- NRC developing electronic reporting capability for annual reports
- Staff anticipates publishing rule in first quarter 2008
- Full compliance with fatigue management provisions required within 18 months of publication

# Worker training will be critical to achieving the full benefit of the fatigue management provisions

- Self-declaration
- Behavioral observation
- Effective fatigue counter-measures
- Shift-work lifestyle management
- Fatigue assessment

# Questions?

