

# **Regulatory Analysis for the Fatigue Portion of the FFD Rule**

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# Background

- Draft analysis developed using primarily NEI data
- Limitations of data required simplifying assumptions for certain cost estimates
- Integration of FFD and Fatigue regulatory analyses is an opportunity to revise the analysis with more current and complete information

# Regulatory Analysis Assumptions

- Baseline assumes full licensee compliance with existing requirements, including the recent Fatigue Order.
- A sensitivity analysis is included that is based on a pre-order baseline.
- Numerous other assumptions used in this analysis are consistent with those of the drug and alcohol testing component of the regulatory analysis.

# Approach

## Benefits

- Benefits estimated will arise directly from the requirement itself, and
- Synergistically when the requirement acts as a compliment to other requirements
- Analysis of benefits of proposed requirements will be qualitative, when necessary, and
- the analysis may be quantitative where supported by PRA methods

# Approach (continued)

## Costs

- Assumptions defined in “Background Paper on the Preliminary Data and Assumptions to be used for Analysis of the Fatigue Requirements in the Proposed Amendments to 10 CFR Part 26”
- Estimates are preliminary

# Information Collection

- Staff contacting a sample of 9 facilities
- Selection criteria include
  - Facility population size
  - Fleet membership or independent
  - Geographic location
  - Number of units

## Analytical Assumptions for Fatigue Requirements

Description of Parameter	Estimate
<b>Section 26.27 - Written Policies and Procedures</b>	
One-time hours of FFD program manager labor to develop a description of fatigue-related resources available to workers [26.27(b)(7)]	40
One-time hours of legal personnel to review description of fatigue-related resources available to workers [26.27(b)(7)]	1
One-time hours of clerical personnel to support preparation of description of fatigue-related resources available to workers [26.27(b)(7)]	8

## Analytical Assumptions for Fatigue Requirements (continued)

<b>Section 26.197 - General Provisions</b>	
One-time hours of FFD program manager labor to develop the description of process to be followed for self-declarations [26.197(b)(1)]	40
One-time hours of legal personnel to review the description of the process to be followed for self-declarations [26.197(b)(1)]	8
One-time hours of clerical personnel to support preparation and maintenance of the description of the process to be followed for self-declarations [26.197(b)(1)]	8
One-time hours of FFD program manager labor to describe the process for implementing work hour controls [26.197(b)(2)]	120
One-time hours of legal personnel to review the description [26.197(b)(2)]	8
One-time hours of clerical personnel to support development and maintenance of the description [26.197(b)(2)]	20



## Analytical Assumptions for Fatigue Requirements (continued)

One-time hours of FFD program manager time to make KA revisions to the training and examination [26.197(c)]	80
One-time hours for clerical personnel to support the training program revisions [26.197(c)]	12
Minutes for initial training per trainee (fatigue module only) [26.29 and 26.197(c)]	45
Minutes for initial examination per trainee (fatigue module only) [26.29 and 26.197(c)]	15
Hours of trainer preparation and examination grading (fatigue module only) [26.29 and 26.197(c)]	3
Minutes for annual refresher training per trainee (fatigue module only) [26.29 and 26.197(c)]	30
Minutes for annual comprehensive examination per trainee (fatigue module only) [26.29 and 26.197(c)]	15

## Analytical Assumptions for Fatigue Requirements (continued)

Hours of trainer preparation for each refresher training session (fatigue module only) [26.29 and 26.197(c)]	2.5
Minutes for trainer to grade all comprehensive annual examinations per session (fatigue module only) [26.29 and 26.197(c)]	30
One-time hours for modifying systems/procedures for recordkeeping of individuals' work hours under proposed rule (per facility) [26.197(d)(1)]	80
Annual number of deviation authorizations per facility under existing requirements	1,530
Minutes for recordkeeping each work hour deviation authorization under existing requirements	1
Annual number of waivers granted from the work hour controls per facility under proposed rule	574

## Analytical Assumptions for Fatigue Requirements (continued)

Minutes for recordkeeping each waiver granted under proposed rule [26.197(d)(2)]	1
Minutes for recordkeeping each documented work hour review required under section 26.199(g)(5) of proposed rule (reviews performed quarterly) [26.197(d)(3)]	1
Total annual number of fatigue assessments per reactor under proposed rule	21
Minutes for recordkeeping each documented fatigue assessment required under section 26.201 of proposed rule [26.197(d)(4)]	1

## Analytical Assumptions for Fatigue Requirements (continued)

<b>Section 26.199 - Work Hour Controls</b>	
Annual managerial hours for reviewing and revising schedules consistent with the objective of preventing impairment from fatigue due to the duration, frequency, or sequencing of successive shifts (per facility) [26.199(c)(1)]	80
One-time cost of contractor and materials to set up work hour tracking system under 26.199(c)(2)(ii) (per program) [26.199(c)(2)(ii)]	TBD
Hours for FFD managerial involvement to set up and maintain tracking system [26.199(c)(2)(ii)]	TBD
Hours for FFD staff (i.e., non-managerial) involvement to set up and maintain tracking system [26.199(c)(2)(ii)]	TBD
One-time hours for facility personnel to recruit and hire each employee needed to achieve compliance with the work hour controls of section 26.199(c)(2), as appropriate (per facility)	24

## Analytical Assumptions for Fatigue Requirements (continued)

One-time number of employees hired under the work hour controls of section 26.199(c)(2) (per facility)	TBD
Annual cost of employing new-hires (e.g., annual wages) per facility	TBD
Annual number of deviation authorizations per facility under existing requirements	1,530
Minutes for shift manager to request a deviation under existing requirements	10
Minutes for plant superintendent to authorize and document a deviation under existing requirements	5
Annual number of waiver requests per facility evaluated by shift manager conducting a safety evaluation under proposed rule [26.199(d)(4)(i)(A)]	1,530
Annual number of waiver requests evaluated by supervisor conducting an assessment under proposed rule [26.199(d)(4)(i)(B)]	765

## Analytical Assumptions for Fatigue Requirements (continued)

Annual number of waivers granted from the work hour controls per facility under proposed rule [26.199(d)(4)]	574
Minutes for shift manager to determine safety of a waiver under proposed rule [26.199(d)(4)(i)(A)]	10
Minutes for supervisor to make an assessment for a waiver under proposed rule [26.199(d)(4)(i)(B)]	10
Minutes for shift manager or supervisor to document a waiver granted under proposed rule [26.199(d)(4)(iii)]	5
Managerial hours per facility for reviewing overtime hours under existing requirements (per month)	8
Managerial hours per facility for reviewing the documentation identified at 26.199(g)(1), (2), and (3) of proposed rule (per quarter)	40
Managerial hours per facility for taking corrective action under 26.199(g)(4) (per quarter)	0

## Analytical Assumptions for Fatigue Requirements (continued)

Managerial hours per facility for documenting the reviews under 26.199(g)(5) (per quarter)	8
Minutes for manager to find a replacement worker under 26.199(d) for a waiver request that is denied because it does not meet the criteria at 26.199(d)(4)	30
<b>Section 26.201 - Fatigue Assessments</b>	
Annual number of for cause fatigue assessments per reactor under proposed rule [26.201(a)(1)]	8
Annual number of self-declarations requiring a fatigue assessment under proposed rule (per reactor) [26.201(a)(2)]	10
Annual number of fatigue assessments post event per reactor under proposed rule [26.201(a)(3)]	3
Total annual number of fatigue assessments per reactor under proposed rule [26.201]	21

## Analytical Assumptions for Fatigue Requirements (continued)

Minutes for FFD personnel to conduct a fatigue assessment under the proposed rule [26.201(b)]	10
Minutes for FFD personnel to document a fatigue assessment under the proposed rule [26.201(d)]	5
Percent of fatigue assessments that lead to a worker being given a rest break of 10 hours or more [26.201(c)]	10%
Percent of fatigue assessments that lead to a worker being given a rest break of less than 10 hours before returning to work [26.201(c)]	40%
Percent of fatigue assessments that lead to a worker being returned to work without a rest break [26.201(c)]	50%
Percent of persons who return to work with a rest break of less than 10 hours that require controls and conditions [26.201(c)]	10%



## Analytical Assumptions for Fatigue Requirements (continued)

Percent of persons who are returned to work with no rest break that require controls and conditions [26.201(c)]	75%
Percent of controls and conditions that involve increased peer checking by a co-worker [26.201(c)]	50%
Percent of controls and conditions that involve increased surveillance by a supervisor [26.201(c)]	50%
Minutes for a co-worker to carry out increased peer checking [26.201(c)]	15
Minutes for supervisor to implement increased surveillance [26.201(c)]	15