FATIGUE MANAGEMENT PLANS

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AGENDA

What is Fatigue?

Causes and Contributing Factors

Impacts and Risk Factors

Control Measures

EM 385-1-1 (2014) Requirements

Fatigue Management Plan

Conclusion
WHAT IS FATIGUE?

Fa·tigue
fəˈtēɡ/

noun. Extreme tiredness, typically resulting from mental or physical exertion or illness

Synonyms: weariness, sleepiness, drowsiness, exhaustion, lethargy
IMPACT OF FATIGUE

Affects your ability to think clearly and act appropriately
Less alert, don’t perform well, less productive and are more likely to have accidents and injuries
Not good at recognizing their own level of impairment and can be unaware that they are not functioning at their best
Worst case scenario = they can drop off to sleep in the middle of a task
EFFECTS OF FATIGUE VS ALCOHOL

Awake for 17 hours =
 0.05% BAC performance

Awake for 24 hours =
 0.10% BAC performance

On 4 hours of sleep, 1 beer
can have the impact of 6
CAUSES AND CONTRIBUTING FACTORS

Equipment and Handling (weight/stability)  Commuting Times
Shift Work/Night Shift  Environmental Conditions
Physically Demanding or Repetitive Tasks  Sleep/Rest Cycle
Time Pressure to Complete Task  Quality of Rest Time/Hours of Sleep
Amount of Concentration Required  Other Health Conditions/Medications
Complex and Difficult Tasks  Social Conditions at Work/Home
Unplanned Work, Overtime, and Emergencies  Increased Workload
Stress  Altitude
FATIGUE RISK FACTORS

Irritability
Cogitative impairment
Memory lapses or loss
Impaired moral judgment
Severe yawning
Tremors
Aches
Difficulty concentrating
Digestive problems

Hallucinations
Impaired immune system
Risk of Diabetes
Increased heart rate
Risk of heart disease
Decreased reaction time and accuracy
Obesity
Depression
RECOMMENDED HOURS OF SLEEP

- **OLDER ADULT**
  - 5 - 6
  - 7 - 8
  - 9
  - ≥ 65 years

- **ADULT**
  - 6
  - 7 - 9
  - 10
  - 26 - 64 years

- **YOUNG ADULT**
  - 6
  - 7 - 9
  - 10 - 11
  - 18 - 25 years

**Legend:**
- **Recommended Range**
- **May be Appropriate**
- **Not Recommended**
PERSONAL CONTROLS

Have a bedtime routine
Sleep in a quiet, comfortable, and dark bedroom
Ensure quality and quantity sleep
Seek medical attention for sleeping disorders
Avoid excessive consumption of alcohol
Avoid stimulants like coffee or tea before bed
Maintain a basic level of fitness and exercise regularly
ADMINISTRATIVE FATIGUE CONTROLS

- Alternate work tasks
- Allow for more frequent or longer breaks
- Alternative commutes
- Eat healthy food (lower sugar)
- Take walks (administrative employees)
- Alternate, limit, or eliminate night shifts

Schedule high risk tasks when most alert
WORKPLACE FATIGUE CONTROLS

- Fatigue mats
- Lifting devices
- Work assistance in lifting and holding
- Good ventilation (cool or heat, depending)
- Ability to move around every hour or so
- Use of personal protective equipment
- Use of alarms or monitors
A Fatigue Management Plan (FMP) is a requirement added in the USACE Safety & Health Requirements Manual, EM 385-1-1, 2014.
A FMP is required whenever work hours:

1. Exceed 10-hours a day for more than 4 consecutive days;
2. Exceed 50-hours in a 7-day work week;
3. Exceed 12-hours a day for more than 3 consecutive days, or
4. Exceed 58-hours a week for sedentary (to include office) work.

A FMP is required for government employees in the Project Safety and Occupational Health (SOH) Plan and for contractors as part of their Accident Prevention Plan (APP).
The FMP needs to address certain conditions for operator work hour limitations in the following areas:

– Equipment Operators
– Motor Vehicle Operators
– Floating Plant Personnel
Equipment Operators

Operators of equipment, such as hoisting equipment and draglines, mobile construction equipment, electrical power systems, hydropower plants, industrial manufacturing systems, hydraulically operated equipment, powered vessels, and boats.

Not be permitted to exceed 12-hours of duty time in any 24-hour period, including time worked at another occupation.

A minimum of 8 consecutive hours of rest between shifts in a 24-hour period is required.
Motor Vehicle Operators

While on duty, cannot operate vehicles for a continuous period of more than 10-hours in any 24-hour period.

While on duty, cannot operate a motor vehicle after being in a duty status for more than 12-hours during any 24-hour period.

A minimum of 8 consecutive hours shall be provided for rest in each 24-hour period.
Floating Plant Personnel
Must be scheduled to receive a minimum of 8-hours rest in any 24-hour period

Exceptions:

a. When quarters are provided immediately adjacent to, or aboard the work site, these hours of rest may be divided into no more than 2 periods, one of which must be at least 6 continuous hours in length.

b. Rest periods may be interrupted in case of emergency, drill, or other overriding operational necessity.
Rest is as a period of time during which the person concerned is:

– off duty;
– not performing work, including administrative tasks; and
– afforded the opportunity for uninterrupted sleep.

This does not include time for breaks, meals, or travel time to/from work.
FATIGUE MANAGEMENT PLAN
FATIGUE MANAGEMENT PLAN

A FMP must identify:

- *Affected workers*
  Workers that exceed the work hours listed (10+ hours/day for 4+ days; etc.)

- *Management Responsibility*
  The supervisor is ultimately responsible for ensuring his/her employees are trained, mitigating and controlling fatigue, and following the FMP.
FATIGUE MANAGEMENT PLAN

A FMP must identify (continued):

– *Training*
  All affected workers and those who work with them must be trained in symptoms of fatigue, how to avoid fatigue, actions to take if a worker appears fatigued, and controls to prevent fatigue.

– *Controls*
  Work scheduling, rotating jobs, breaks, etc.
WEB-BASED TRAINING
& TOOLS
NIOSH FATIGUE TRAINING

http://www.cdc.gov/niosh/docs/2015-115/
Approximately 2.2 hours to complete
Training consists of:
  – Science of fatigue
  – Health risks of shift work and long hours
  – Strategies to reduce risk of fatigue
FAA FATIGUE TRAINING


Approximately 2.5 hours to complete

Training consists of:
- Video (20 min)
- Fatigue basics (32 min)
- Sleep basics (24 min)
- Controlling/preventing fatigue (40 min)
- Exam
Tool to assess fatigue related risk in aviation operations.
Sleep and work history over a period of 72 hours is needed.
After data is submitted, a fatigue risk report will be generated.
Date/Time of report creation: 09/01/2015 13:05
Airbase closest to residence: HTS
Incident number: 
Date/Time of incident: 
Location of incident: 

Incident Description:

Work And Sleep History

<table>
<thead>
<tr>
<th>Hours worked in the last 24 hours</th>
<th>Hours slept in the last 24 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>16.3 hrs</td>
<td>5.5 hrs</td>
</tr>
<tr>
<td>24.0 hrs</td>
<td>13.5 hrs</td>
</tr>
<tr>
<td>31.3 hrs</td>
<td>21.5 hrs</td>
</tr>
<tr>
<td>Total hours worked</td>
<td>Total hours slept</td>
</tr>
<tr>
<td>34.0 hrs</td>
<td>29.5 hrs</td>
</tr>
</tbody>
</table>

Typical Commute and Sleep Times

<table>
<thead>
<tr>
<th>Typical work commute</th>
<th>Typical sleep period on non-work days</th>
<th>Time to bed</th>
<th>Time out of bed</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 hrs 15 min</td>
<td>02:00</td>
<td>03:00</td>
<td>10:00</td>
</tr>
</tbody>
</table>

Duration of sleep period on non-work days: 8.0 hrs.

Fatigue Estimate

![Work And Sleep History (GMT-4)](chart)

Legend: [Work], [Sleep], [Commute]
CONCLUSION
Questions?

Comments?

Concerns?