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Brunel Energy, Inc.

Fatigue Management Plan

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1. Purpose

- 1.1. Brunel Energy, Inc., hereinafter referred to as, the “Company,” has established a program compliant with OSHA. The Company has set forth general guidelines and criteria for a Fatigue Management Plan specific to the operational needs of the Company’s operating sites and to mitigate related hazards.

2. Applicability

- 2.1. This policy applies to employees, subcontractors and/or visitor(s) of the Company. For the purposes of this policy, an employee shall be considered on the job whenever he/she is:
 - 2.1.1. On or in, any Company or client property, including parking areas; or
 - 2.1.2. On Company time even if off Company premises (including paid lunch, rest periods and periods of being on call).
- 2.2. As a condition of employment, Company employees are required to abide by additional governmental or customer policies and requirements that may be imposed at a worksite in addition to the requirements of these policies and procedures. Nothing set forth in this policy constitutes, construes, or interprets in any way as a contract of employment.

3. Definitions

- 3.1. **Circadian Rhythm** is a physical, mental, and behavioral change that follows a roughly 24-hour cycle, responding primarily to light and darkness.
- 3.2. **Fatigue** is a temporary loss of power to respond that is induced in a sensory receptor or motor end organ by continued stimulation. Signs of fatigue include tiredness even after sleep, psychological disturbances, loss of energy and inability to concentrate.
- 3.3. **Fatigue Management** is a systematic approach to effectively control the risks of fatigue.
- 3.4. **Fit for Work** is a state of physical, mental, and emotional wellness which enables an individual to perform an assigned task competently and safely.
- 3.5. **Micro-Sleep** refers to brief episodes of sleep (30 seconds or less) where the eyes close and the brain function lapses into unconsciousness. Many people do not even recognize these occurrences and believe themselves to have been completely awake. This can be brought on by sleep deprivation or monotonous tasks. The outward signs of these episodes are droopy eyes, slow eye blink response, and head-nodding.

4. Responsibilities

- 4.1. Manager(s) and HSE Supervisor(s) shall:
 - 4.1.1. Ensure that the persons under their control are aware of and comply with this procedure.

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- 4.1.2. Ensure that applicable work schedules comply with this procedure.
- 4.1.3. Monitor personnel for the signs and symptoms of fatigue.
- 4.1.4. Approve controls for managing fatigue.
- 4.1.5. Conduct a review of any fatigue-related incidents and effectiveness of existing control measures are required.
- 4.1.6. Attend supervisor training.
- 4.2. Employee(s) shall:
 - 4.2.1. Present fit for work at the commencement of and during the work period.
 - 4.2.2. If not fit for work, then notify their supervisor to ensure that an appropriate risk mitigation process is implemented. Comply with this fatigue management procedure.
 - 4.2.3. Monitor for the signs and symptoms of fatigue in their co-workers.
 - 4.2.4. Communicate and report personnel fatigue issues to their Supervisor.
 - 4.2.5. Attend awareness level training.
- 4.3. Subcontractor(s) shall:
 - 4.3.1. Present fit for work at the commencement of and during the work period.
 - 4.3.2. If not fit for work, then notify their supervisor to ensure that an appropriate risk mitigation process is implemented. Comply with this fatigue management procedure.
 - 4.3.3. Monitor for the signs and symptoms of fatigue in their co-workers and employees.
 - 4.3.4. Communicate and report personnel fatigue issues to their Supervisor.
 - 4.3.5. Attend awareness level training.

5. Requirements

- 5.1. The purpose of the Fatigue Management program is to eliminate incidents due to fatigue at the jobsite. All employees are required to be familiar with this program and to report every case of fatigue to management.
- 5.2. Training on fatigue hazards and countermeasures is to be completed prior to work assignment and on an annual basis.
- 5.3. The Company is responsible for evaluating this policy yearly by conducting an analysis of work tasks to control fatigue.
- 5.4. All employees are required to practice fatigue countermeasures while at work as well as in their own homes.
- 5.5. Preventative Strategies:
 - 5.5.1. Minimize sleep loss: Developing a sleep routine makes it easier to fall asleep. Relaxing prior to bed and creating a cool, comfortable, quiet sleeping environment will induce a deep, refreshing sleep. Employees should try to get 6-9 hours of sleep a night.

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- 5.5.2. Diet: Eating too much or too little of certain foods can interfere with the ability to fall and stay asleep. Caffeine, alcohol, and nicotine interfere with sleep and should be avoided prior to bed.
- 5.5.3. Medication: Employees must not chronically use over the counter prescription drugs, and any other product which may affect an employee's ability to perform their work safely.
- 5.5.4. Drink water: Staying hydrated helps fight fatigue. Employees should try to get 6 to 10 8-ounce glasses a day.
- 5.5.5. Exercise: Getting regular exercise of about 30 minutes a day helps to maintain health and fight the effects of fatigue. Exercising before the start of a shift, if not overdone, can invigorate the body and mind and provide a healthy way to wake up for work. Employees should stretch each day before work and throughout the day as needed.
- 5.5.6. Ergonomic Activities: Employees are encouraged to rotate job duties to prevent fatigue and to use ergonomically friendly equipment when available. Personal Protective Equipment (PPE) that makes job duties easier should be worn when doing repetitive and strenuous tasks.
- 5.5.7. Rest breaks help control fatigue and increase mental fitness. Supervisors are responsible for scheduling breaks for crews. When working in extreme heat or other severe weather conditions, supervisors are required to schedule breaks more frequently.
- 5.5.8. Incident Reporting: If an employee is feeling the effects of extreme fatigue from over exertion or working in extreme weather, employees should report to their supervisor immediately. Their supervisor should evaluate the situation and relieve them from duty either temporarily or suspend their work activities for a determined period of time if necessary. Inversely, if a supervisor sees someone experiencing extreme fatigue, they are to address the situation immediately and remove them from the work environment to provide them sufficient rest and hydration, as necessary.
- 5.6. Fatigue contributes to accidents by impairing performance and in extreme cases causing people to fall asleep. Fatigue related Micro-Sleep is very hard to predict or prevent and can place the individual and others' safety at risk. Managing fatigue requires the following measures to be undertaken:
 - 5.6.1. Complete a fatigue risk assessment.
 - 5.6.2. Create a management plan to eliminate or mitigate, with controls, identified risks.
 - 5.6.3. Ensure personnel are educated and informed of fatigue risk.

6. Procedure

6.1. Fatigue Risk Assessment

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- 6.1.1. A fatigue risk assessment will be utilized to aid in managing and addressing fatigue risks.
- 6.1.2. Fatigue risks must be assessed as Tolerable, Intermediate, or Intolerable and proper steps taken to mitigate fatigue.
- 6.1.3. Tolerable – Controls in place are adequate to mitigate the risks and do not need active management.
- 6.1.4. Intermediate – Controls require active management while tasks are being performed.
- 6.1.5. Intolerable – Must be addressed with additional controls and reassessed.
- 6.2. Assessment of Control Effectiveness
 - 6.2.1. Control effectiveness can be reviewed by examining reports of fatigue and incidents where fatigue is a factor. The effectiveness of controls can also be monitored by examining personnel and circumstances where extended shifts need to be worked. Compliance with fatigue management requirements must be assessed to ensure controls are in place and operating effectively. Deficient controls must be remedied in a timely manner.
 - 6.2.2. Any risks deemed Intolerable must be addressed with additional controls which allow a reassessment of Tolerable or Intermediate.
 - 6.2.3. The fatigue risk assessment and management plan must be documented and reviewed when work schedules or job roles are significantly modified. A fatigue management plan is any document that is used to address the identified risks in the risk assessment.
- 6.3. Operational Work Schedules/Rosters
 - 6.3.1. The risk of fatigue can be significantly reduced by effective planning and resourcing of work shifts, work cycles and rotations. Limiting work hours and/or controlling job rotation schedules is necessary to reduce employee fatigue. Each responsible site Supervisor must ensure that schedules, work cycles or job roles are assessed for fatigue risks. The following items must be assessed at a minimum:
 - 6.3.1.1. Are safety critical tasks planned during Circadian Rhythm low hours, 2am - 6am and 2pm- 4pm?
 - 6.3.1.2. Are complex tasks planned on the first or final shift of a nightshift work cycle?
 - 6.3.1.3. Are standby and on-call duties limited where possible?
 - 6.3.1.4. Does day shift start before 6am?
 - 6.3.1.5. Is the maximum number of shifts in a work cycle in line with relevant industry practices and regulatory standards?

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6.3.1.6. Do extended shifts (> 12 hours) occur more than three times in a work cycle?

6.3.1.7. Do shifts rotate backwards (day to night to afternoon)?

6.4. Office Work, Business Travel and Commute

6.4.1. Office work, business travel, and commute time have associated fatigue risks that must be managed. Business travel to operational sites must be managed through local journey management plans. General business travel must be managed through fatigue risk assessments. Commuting time and core business hours for office locations must also be assessed. The following items must be assessed at a minimum:

6.4.1.1. Do office schedules regularly exceed 14 hours per day, including the lunch break and total commute time?

6.4.1.2. Do core office hours regularly exceed 80 hours in a two-week period?

6.4.1.3. Are opportunities for car/van pooling or use of public transport available?

6.4.1.4. Does business air travel occur where total travel time from home to destination is > 14 hours?

6.4.1.5. For business related ground travel, are alternatives to self-drive available?

6.5. Risk Controls

6.5.1. Risk controls for mitigating fatigue must be applied using the hierarchy of controls. The number of employees at risk and the level of risk must be considered when implementing controls.

6.6. Rest

6.6.1. Rest is the most important control measure for managing fatigue. Time spent away from the immediate work environment allows workers to recover from fatigue, thereby improving work performance, vigilance, safety, and efficiency. Conditions for restful sleep must be provided and breaks must be taken during the work shift to control fatigue and mental fitness and not be traded for an early finish time for the shift. To provide adequate rest consider the following:

6.6.1.1. Is a ten hour or longer break between work shifts provided?

6.6.1.2. Does the break between work shifts provide a sleep opportunity of 7 or more hours of continuous sleep?

6.6.1.3. Is a minimum of one break provided between each 4 hours of work with one break of sufficient length to have a meal (i.e. 30 minutes)?

6.6.1.4. Are more frequent short breaks allowed during strenuous activities?

6.6.1.5. Is ready access to drinking water provided?

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7. Training

- 7.1. All employees must be trained upon initial assignment and annually thereafter.
- 7.2. Awareness level training must be provided to all personnel who have been identified to be at risk for fatigue. The purpose of this training is to provide information and education related to the risk factors and signs of fatigue. The training will assist all personnel to recognize the symptoms of fatigue and manage fatigue risks in a safe manner. As a minimum, the training topics must enable the individual to:
 - 7.2.1. Understand responsibilities and know how to recognize the effects of fatigue in themselves and others.
 - 7.2.2. Understand the influences of a healthy lifestyle and non-work activities on fatigue.
 - 7.2.3. Understand the effects of medical conditions, sleep disorders, and drugs and alcohol.
 - 7.2.4. Understand how to apply personal countermeasures to managing fatigue.
 - 7.2.5. Understand and accept their responsibility to use their recovery time effectively and present rested and fit for work when their work shift begins.
- 7.3. Ongoing awareness level training should be presented to all employees who have been identified to be at risk for fatigue periodically to ensure a minimum level of understanding, skills, and techniques necessary to perform safe fatigue management procedures while conducting job site assignments.

8. Recordkeeping

- 8.1. Risk assessments shall be documented using the Fatigue Risk Assessment Checklist form for identifying fatigue risks.

9. Reference

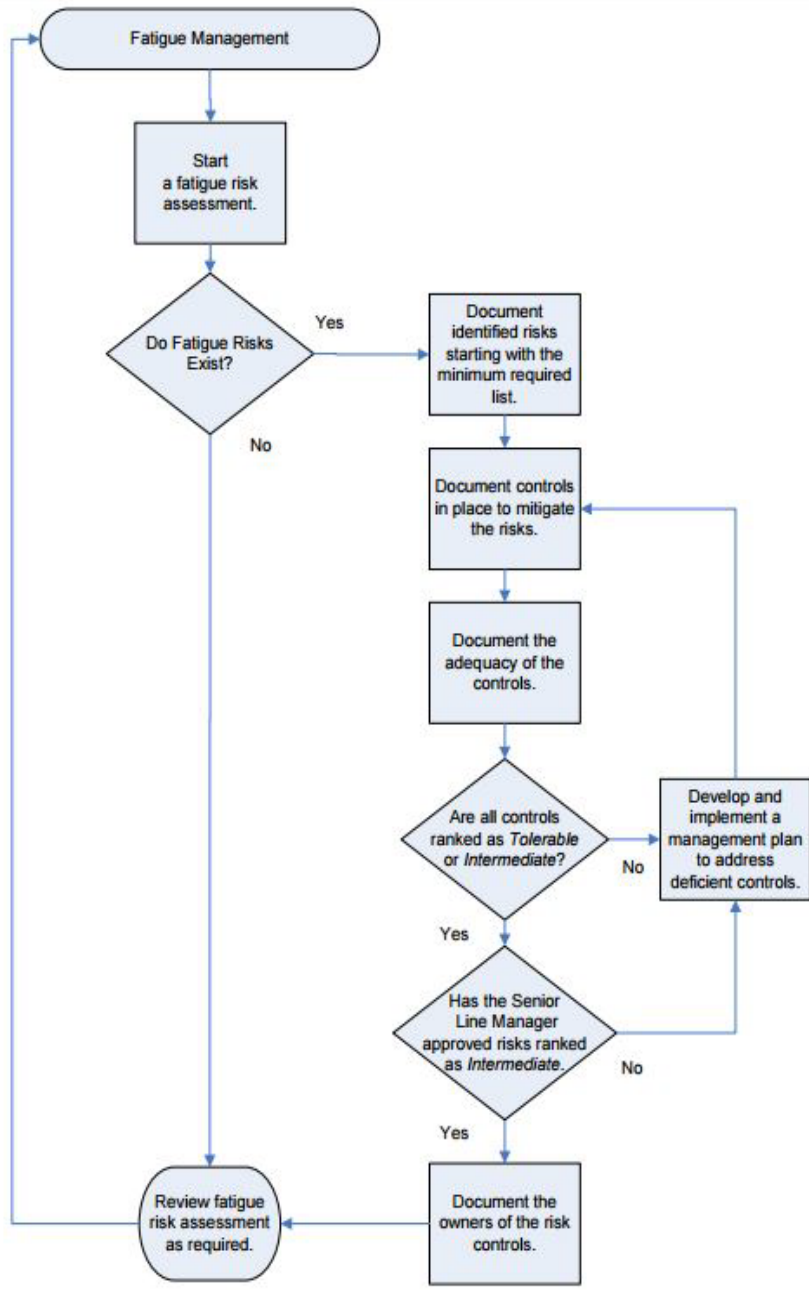
- 9.1. ACOEM Presidential Task Force on Fatigue Risk Management: Fatigue Risk Management in the Workplace, February 2012

10. Appendix

- 10.1. Fatigue Management Flow Chart
- 10.2. Fatigue Risk Assessment Checklist form

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APPENDIX 10.1 FATIGUE MANAGEMENT FLOW CHART



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APPENDIX 10.2 FATIGUE RISK ASSESMENT CHECKLIST

Mental and Physical Demands of Work

- Do jobs involve repetitive or monotonous work, e.g. haul-truck driving?
- Is the work physically demanding?
- Is there time pressure due to a heavy workload?
- Is work fast paced?
- Is work intensive?
- Can employees/workers vary work pace or work tasks as desired?
- Have employees/workers been consulted regarding work tasks or how to carry them out?
- Is high vigilance and/or concentration required?
- Are there different demands that can be difficult to combine?
- Are complex, difficult, or strenuous tasks required at the end of shifts or shift cycles?

Adverse Working Conditions

- Do adverse working conditions exist, e.g. exposure to:
- Noise?
- Heat?
- Cold?
- Dust?
- Hazardous substances?
- Is there significant exposure to hazardous chemicals, dust, and noise? (Note that exposure standards may need to be adjusted.)

Stress

- Do jobs involve high demand, but low control?
- Are there poor social relations at work, e.g. bullying?
- Is there low social support from peers and supervisors at work?
- Is there low recognition for the effort involved in the work?

Excessive Commuting Times Necessary

- Is significant travel to and from work necessary each day so that time for adequate sleep is reduced?
- Are long-distance commutes necessary at the beginning of a work cycle?

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Work Scheduling and Planning

Changes to rosters

- Do employees/workers get sufficient notice of roster changes?
- Is fatigue management taken into account in roster changes?

Shift start/finish times

- Do any shifts start or finish between 10pm and 6am?
- Are split shifts required or offered?
- Are complex, difficult or strenuous tasks required at the start or end of such shifts?

Night shifts, including number of consecutive night shifts

- Are too many consecutive night shifts worked?
- Is more than eight hours work required overnight shift?
- Are more than four consecutive 12-hour night shifts worked?
- Are more than five consecutive 10-hour night shifts worked?
- Are more than six consecutive 8-hour night shifts worked?
- Are tasks requiring sustained physical or mental effort undertaken on night shift?
- Are complex physical or mental tasks undertaken on night shift?

Short breaks between or within work shifts

- Is there enough time between work shifts to allow for adequate sleep?
- Enough time in a break for five hours uninterrupted sleep in 24 hours (only for one night); AND
- Enough time in breaks for 12 hours of sleep in 48 hours and at least six hours in 24 hours; AND
- Enough time in breaks for 50 hours sleep in seven days?
- Is the break between shifts less than 10 hours?
- Are there at least two consecutive nighttime sleep opportunities (48 hours) every seven days?
- Are breaks within shifts long enough and frequent enough to allow employees/workers to rest, refresh and nourish themselves?

Long hours of work across a roster cycle

- Does one shift involve more than 12 hours in a day (including call outs)? This includes travel time, especially for remote sites.
- Do hours of active work (total time spent at work including overtime) exceed 48 hours in any seven days, or 624 hours over a three-month (13 week) period?
- Are there irregular and unplanned schedules as a result of call outs?
- Is the working day or working week extended beyond 12 hours in a single day, 48 hours in any seven days, or 624 hours over a three-month (13 week) period as a result of call outs?

Long hours because of on-call duties

- Are there irregular and unplanned schedules as a result of call outs?
- Is the working day or working week extended beyond 12 hours in a single day, 48 hours in any seven days, or 624 hours over a three-month (13 week) period as a result of call outs?

Individual and Non-Work Factors

- To what extent is there evidence of problems as a result of:
 - Family commitments?
 - Insufficient quality sleep?
 - Sleeping disorders?
 - Psychological issues?
 - Alcohol and drug use?
 - Second job/non-paid work?