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# NIGHT FIT AT ALLSEAS

Proactive fatigue countermeasures  
at Pioneering Spirit

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# INTRODUCTION

## Proactive fatigue countermeasures

The crew spends almost one third of the time onboard of the vessel asleep. This off-shift resting phase is essential for mental and physical recovery, and is directly linked to safety, productivity, health, and wellbeing. The Night Fit strategies, implemented during this project, help the crew to recover more efficiently during off-shift rest and therefore increase their performance and resilience to fatigue risks.

## The current project at Pioneering Spirit

In order to optimize workforce performance, health, and safety Allseas decided to implement a proactive fatigue countermeasures approach called 'Night Fit'. This method was applied at their pipelay-construction vessel 'Pioneering Spirit'. In total 350 shift workers were trained and guided in using the Night Fit strategies during two interactive workshops, called 'Work Hard, Sleep Hard'. Special glasses and energy lights were used, which, when applied correctly, have a positive effect on the secretion of sleep hormones and energy levels of the workforce. This will support effective off-shift recovery and adaptation to work shifts – this all without the need for medication.



A photograph of an offshore oil rig deck. A large, powerful jet of water is being sprayed from a high-pressure hose, creating a massive plume of white mist and droplets that fills the right side of the frame. The deck is red with yellow safety railings and various pieces of equipment, including green and black containers, are visible. The background shows the dark blue, choppy sea under a cloudy sky.

# THE CHALLENGE

## Why do we sleep?

We sleep up to 30 years of our lives. High quality sleep between shifts is essential for mental and physical recovery. This is due to the fact that many of the major restorative functions in the body occur mostly and in some cases only during sleep. Examples of these restorative functions are: tissue repair, muscle growth, growth hormone release, and cleaning of the brain. High quality sleep is essential for off-shore workers to ensure optimal physical and mental recovery, and to perform safely.

### Sleep, brain performance, and safety

Besides the effects on the physical health of our body, high quality sleep is also important for our brain to function optimally. Our brain is a highly active organ, which weighs only 2% of the total body weight, but consumes over 20% of all oxygen and glucose. *When not able to get the required number of hours of sleep, our brain's neurons are less able to communicate effectively, leading to reduced alertness, situational awareness, and problem solving ability.*

Fatigue studies have shown that:

- Excessive sleepy or fatigued workers are over two-thirds (60 - 70%) more likely to be involved in accidents than well-rested and alert individuals).
- Approximately 13% of all work-related injuries can be attributed to sleep problems.

However, when a company enhances the quality of sleep from poor to moderate or from moderate to good, will mean that performance and safety related abilities, such as the problem-solving skills, alertness, and motivation of the workforce, will go up. This will help to further reduce human error risks and to optimize shift work performance and safety on the vessel.

The prefrontal cortex of our brain is **highly sensitive** to sleep restriction.

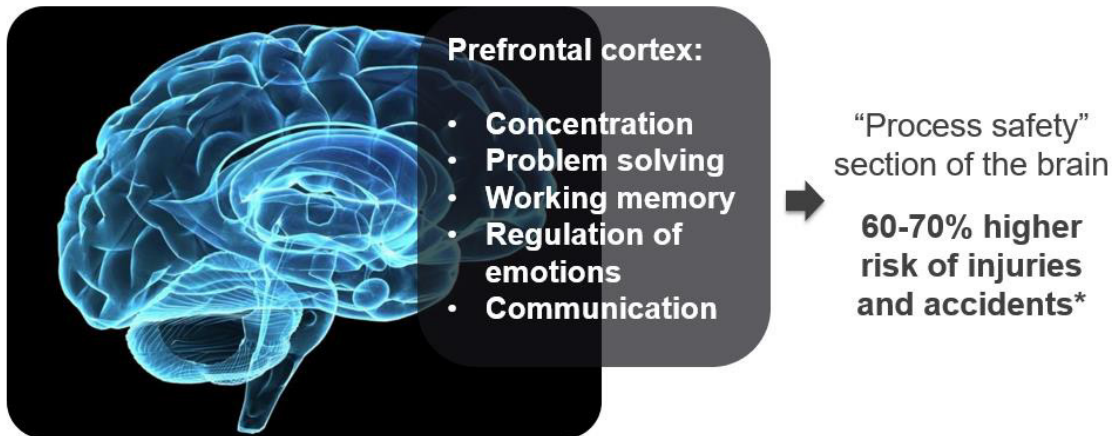


Fig 1. Illustrates the executive processes, which are related to sleep and fatigue. Studies have shown that sleep enhancement has a positive impact on overall performance and safety.

“When I sleep better I have more energy, I’m more focused and my performance is better. Also, I’m in a better mood when I’m well rested, I laugh more.”

- Jokic, - Electrician

## What is fatigue?

Workforce fatigue is a top-10 HSE Human and Organizational factors issue because it increases the risk for human errors to occur. In general, fatigue can be defined as a feeling of tiredness and an inability to perform work effectively. Although there are individual differences in how fatigue affects alertness and performance, nobody is immune from its effects. Compared to a person who is well rested, a highly fatigued shift worker will be less alert, less able to mentally process information, will have slower reaction times, and less work situation awareness. These factors combined lower productivity and increase the risk of work-related errors and accidents.

### Shift work and our internal biological clock

The modern offshore oil and gas industry demands a continuous 24/7 production. However, human beings are not built to work during the night. Naturally, our body is programmed to ensure that energy, alertness, concentration, and other aspects relating to mental and physical performance peak during the day. This programming is done in our internal biological clock centered in our brain. Receptors in our eyes send information to this internal clock about the color and intensity of light, which keeps it attuned to the natural alteration of light and darkness. Blue morning light is the natural sign for our body’s clock that the day has started. As a response our brain signals our body to remain active. Normally, during nighttime, the lack of daylight promotes our brain to secrete melatonin. This hormone is involved with mental and physical rest and recovery, thus helps to promote an optimal quality of sleep.

This document is a modified version of the full report. Please contact us for information about the rest of the report.