FATIGUE RISK MANAGEMENT GUIDING PHILOSOPHY

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Fatigue Risk Management Guiding Philosophy

Sleep-related fatigue has been a long-standing concern for railway workers, industry, government, and specifically for the Teamsters Canada Rail Conference (TCRC) and its predecessor unions. The term *fatigue* can be used to describe a variety of human states. For example, humans can become mentally fatigued from spending an extended or intense period of time on a cognitive task like studying for an exam, while physical fatigue can result from body movements like exercise. The term fatigue can also be used to describe a state of sleepiness ranging from its absolute lowest point, where a person would describe their state as being wide-awake and not at all fatigued, to its highest point, where a person would describe their state as being extremely sleepy and severely fatigued. The latter use of the term is referred to as sleep-related fatigue (referred to hereafter as fatigue) and it is the concern of this document.

The purpose of this document is to outline the TCRC's overarching philosophy on fatigue risk management (FRM). The expectation is that the philosophy will be TCRC's authoritative reference when:

1. Stating TCRC's position regarding fatigue.
2. Guidance on future decisions about fatigue is required.
3. Setting standards for what will be expected in daily operations.
4. Communicating TCRC's commitment to improve FRM for its members.

TCRC Position 1: Fatigue impacts the functional capacity, health, safety and productivity of TCRC members.

Fatigue impacts shift-workers' mental health and their capacity to fulfill their functions as family members, friends and community supporters. Due to factors such as chronic partial sleep deprivation and absences from home during non-standard work hours, shift-workers are often unable to participate in family engagements, social activities or community service. This can deteriorate relationships between the shift-worker and their family, friends and community.

When participation is possible, negative moods resulting from fatigue often make interactions distressing, which can further deteriorate relationships. Relationships and mental health are mutually dependent. When relationships suffer due to fatigue, mental health can also suffer and likewise, when mental health suffers due to fatigue, relationships suffer.

Science has also demonstrated that fatigue related impairments are similar to those caused by alcohol intoxication. For example, the level of fatigue experienced by a person who has been awake for between 17 and 18.5 hours results in reaction times similar to those in people with a blood alcohol concentration (BAC) of 0.05% and at 21 hours of wakefulness, reaction times are similar to those in people with a BAC of 0.08%. Health, safety and productivity can all be affected by slowed reaction times, as would be the case when a fatigued operator reacts too slowly to a signal and collides with stationary equipment. This type of incident can result in injuries and cause damage to track and equipment that halt operations and reduce productivity.

Health can also be impacted directly by shift-work. For example, shift-workers are typically unable to regularly satisfy their daily biological need for between six and nine hours of sleep when they sleep during the daytime hours. This can result in chronic partial sleep deprivation. Higher rates of cardiovascular disease, sleep disorders, elevated fatigue levels, gastrointestinal disorders and psychological disorders have all been linked to chronic partial sleep deprivation or shift-work.

TCRC Position 2: Fatigue risk management systems and processes can be used to continuously improve the functional capacity, health, safety and productivity of TCRC members.

Government regulations represent an attempt to reduce the impact of fatigue on safety in the rail industry. However, fatigue related incidents and accidents continue as do functional difficulties, health problems and productivity issues.

Furthermore, regulations are not amenable to expedited change. Relying on current regulations to continuously reduce the impact of fatigue and improve functional capacity, health, safety and productivity is therefore, counterproductive.

Fatigue risk management systems and processes based on current fatigue science offer a better alternative to continuously reducing the impact of fatigue and improving functional capacity, health, safety and productivity. Being the purview of TCRC and railway managers, fatigue risk management systems and processes are more amenable to the continuous improvement process than government regulations.

Systems and processes can be designed to directly address the six risk factors that increase the likelihood of fatigue and deteriorate functional capacity, health, safety and productivity. The six fatigue risk factors are:

1. Acute sleep disruption
2. Chronic sleep disruption/Sleep debt
3. Continuous wakefulness
4. Circadian rhythm effects
5. Medical and psychological conditions, illnesses and medications
6. Sleep disorders

For example, one system that can reduce fatigue and improve functional capacity, health, safety and productivity is scheduling using time pools. If designed and managed properly, time pools can reduce the likelihood of the first four fatigue risk factors. If time pools are coupled with advanced education and training processes, the remaining two fatigue risk factors can also be addressed. It should also be possible to design a time pool system that does not conflict or compete with member earnings and availability for work. Given the past track record of time pools and TCRC member's satisfaction with these systems, productivity may also be improved where they are implemented.

TCRC Decision Making Guidance: The scientific understanding of how to reduce fatigue risk factors is constantly improving. Current fatigue science will be used to guide decisions about fatigue risk management.

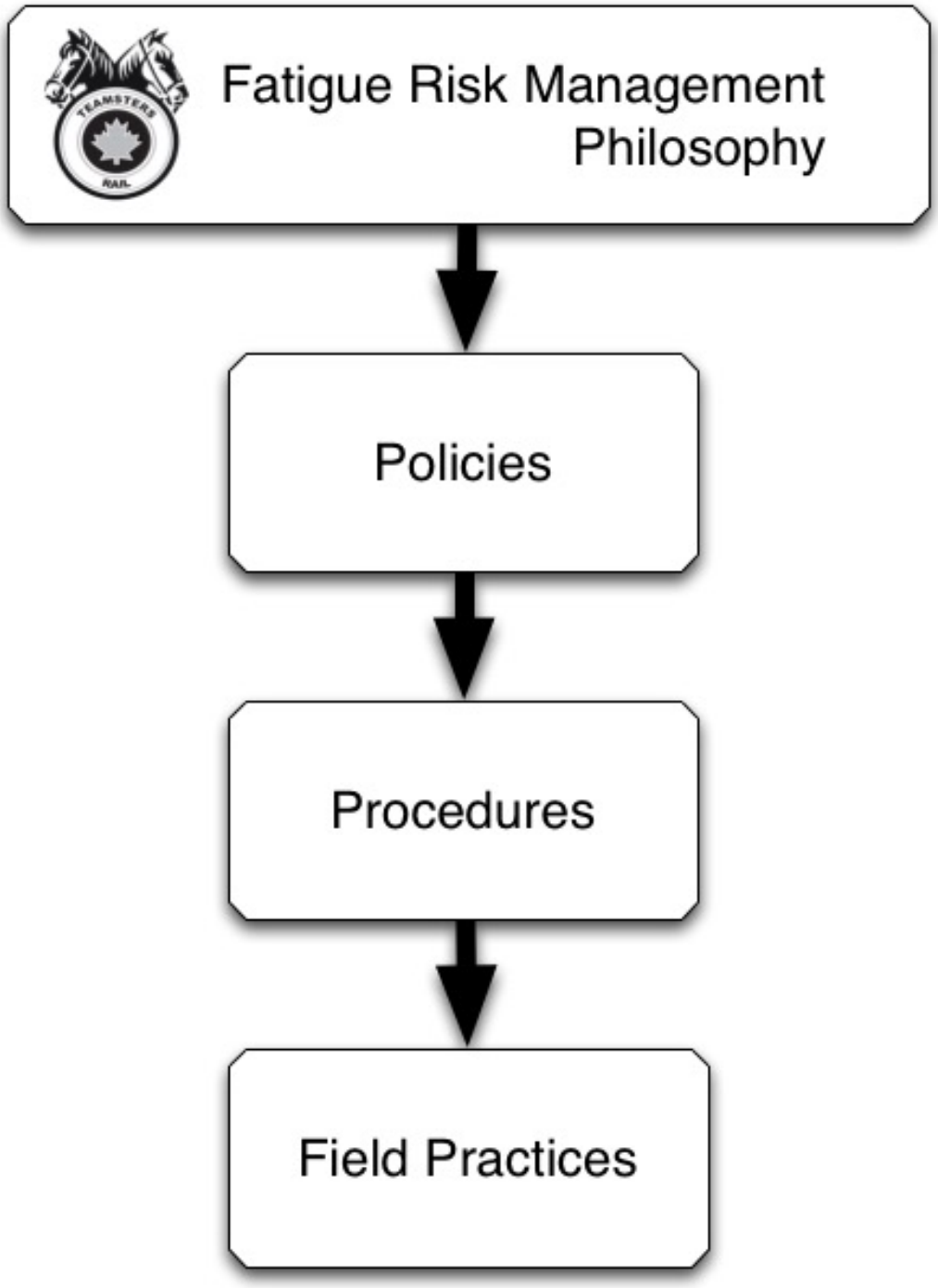
The science of fatigue is continuously evolving. New research findings are regularly published in peer reviewed journals that can be translated into practical applications to continuously improve how the six fatigue risk factors are managed. For example, recent research has shown that career shift-workers have a higher risk of contracting serious diseases such as diabetes, metabolic syndrome and cancer if their melatonin levels are frequently manipulated with light in the 470 - 480 nm range. Outdated practices based on older knowledge used full spectrum bright light to reduce fatigue in the middle of the night and manage the circadian rhythm effect risk factor. Decisions based on current fatigue science can be translated into improved systems and processes that reduce the fatigue risk factors. For instance, bright light with the harmful wavelengths filtered out can reduce fatigue in the middle of the night without impacting melatonin and increasing the risk of serious diseases.

TCRC Standards: Formal polices, procedures and field practices will be consistent with TCRC's philosophy on fatigue risk management.

Fatigue poses risks to functional capacity, health, safety and productivity. These risks can be reduced through applications of current fatigue science aimed at developing systems and processes that continuously improve how the six fatigue risk factors are managed. Fatigue management policies often take the form of fatigue management plans which must satisfy government regulations. If they are to provide general statements for reference when developing procedures, they should be based on current fatigue science and aimed at continuously improving how the six fatigue risk factors are managed.

Procedures are only effective at reducing the risks of fatigue in so far as they are being routinely practiced in daily operations. Consistency between a

continuously improving set of fatigue management policies and procedures derived from the guiding philosophy is required to increase the likelihood that field practices reduce fatigue and improve functional capacity, health, safety, and productivity.



TCRC Commitment: The functional capacity, health, safety and productivity of TCRC members will be continuously improved by fatigue risk management systems and processes which TCRC will also strive to continuously improve.

Work should not expose people to unnecessary risk. The 24/7 nature of railway operations makes the goal of abolishing all fatigue related risk unreasonable. A level of risk will be present for workers operating in a 24/7 system that requires them to work during the hours when human biology is programmed to be asleep. In this sense, a level of risk is inherent in railway operations. However, TCRC is committed to minimizing the level of risk as much as possible. Setting a goal to continuously improve functional capacity, health, safety and productivity through continuously improving the way fatigue is managed will ensure that railway workers and their families, friends and communities are not exposed to any unnecessary risk resulting from railway work.

The TCRC is committed to continuously advocating for improvements to fatigue management systems and processes that effectively improve the functional capacity, health, safety and productivity of its members. To ensure that changes in the way fatigue is managed result in improvements, tangible, key performance metrics that reflect estimated and actual fatigue as well as functional capacity, health, safety and productivity outcomes will be developed and monitored.

Summary of

TCRC Fatigue Risk management Guiding Philosophy

TCRC Position 1

Fatigue impacts the functional capacity, health, safety and productivity of TCRC members.

TCRC Position 2

Fatigue risk management systems and processes can be used to continuously improve the functional capacity, health, safety and productivity of TCRC members.

TCRC Decision Making Guidance

The scientific understanding of how to reduce fatigue risk factors is constantly improving. Current fatigue science will be used to guide decisions about fatigue risk management.

TCRC Standards

Formal polices, procedures and field practices will be consistent with TCRC's philosophy on fatigue risk management.

TCRC Commitment

The functional capacity, health, safety and productivity of TCRC members will be continuously improved by fatigue risk management systems and processes which TCRC will also strive to continuously improve.