

CN and the TCRC are pleased to provide this joint submission respecting fatigue and fatigue management to the Railway Safety Act Review Panel. Since the last review of the Act, there has been significant progress in applying the current science of fatigue management to enable a better assessment of root causes and to develop mitigation options previously unavailable.

The TCRC and CN recognize that fatigue management plays a critical role in creating a safe operating environment in the rail industry. In 2016, the Transportation Safety Board of Canada (TSB) added “Fatigue management systems for train crews” to its Watchlist highlighting the concern as an important factor in keeping Canadians safe. The TSB supported the Watchlist addition by citing sleep-related fatigue as a contributing factor or risk in 23 railway investigations since 1994.

Over the last decade, a tremendous amount of scientific research on fatigue and fatigue management has been completed. The research has shown that sleep-related fatigue is reliably linked to human performance impairments and significant health risks over the long term. Effective fatigue mitigation solutions are also demonstrated by the research. For example, fatigue risk management education has been shown to improve awareness and to help individuals to better manage their home and work lives.

TCRC and CN jointly agreed to incorporate the most current fatigue science in all current and future fatigue risk management endeavours. Furthermore, both parties accept that improvements can be achieved on the basis of this research and this submission provides details of the progress achieved through our joint efforts which may be used to form the basis of Panel recommendations.

The TCRC and CN agree that improvements are required and possible. In support of this agreement, we are currently working together to develop best practices in fatigue risk management including prevention and countermeasure strategies based on the best available science.

Current Operating Environment

In order to move the extensive amount of goods and resources into and out of Canada, railways must operate 365 day/year, 7/24 hours/day. The efficiency of railways and its capacity rely on the operation of a logistics chain (which include shippers, terminals, ports, etc) on a continual basis. If trains only operated during daylight hours (in order to help prevent fatigue), the capacity of Canadian railways would not be able to sustain demand and would prevent the Canadian economy to maximize its opportunities. There are, nevertheless, opportunities that TCRC and CN are capitalizing on in an effort to deal with the fatigue issue in a practical manner.

The derived benefit of having to operate on a continual basis is that there are many duties within a railway which are predictable and can be scheduled with a level of certainty. For example, scheduled “yard jobs” enable work shifts at the same time and in the same

location every day. Employees performing those tasks can generally plan their work accordingly and, with personal discipline, more easily manage fatigue. However, managing fatigue in train operations is more challenging because the variability of assignments and activities makes adherence to a strict schedule extremely difficult. Currently, operating employees must be prepared to work with relatively short notice. For example, unscheduled “road pools” often require employees to report for duty with only 2 hours notice. Managing sleep and fatigue around this “on-call” work is difficult.

The TCRC and CN agree that any revisions to the current work/rest rules need to be from a scientific approach to best mitigate the risks of fatigue. The TCRC and CN are working together to implement science-based strategies to reduce the risks of fatigue. Data is being collected at pre and post implementation to measure success and benchmark best practices. It is these best practices that should formulate the new rules. For example, data from a current joint TCRC-CN project is indicating that providing employees with better predictability in their work schedules, which increases notification time, makes it easier for employees to manage sleep and fatigue (see below). Based on positive outcomes from employee feedback and increasing the amount scheduling on the network, TCRC and CN have agreed to continue to implement methods to help employees adapt and manage within the existing operating environment. CN and the TCRC believe that fatigue management practices rely on a cooperative effort between all parties working for or with an organization.

To foster this strong commitment from top levels of both organizations in improving fatigue issues, we have created a joint Steering Committee led by Doug Finnon (President, TCRC) and Mike Cory (COO, CN). This Committee hosts quarterly meetings to receive feedback, assess progress, address issues and, consistent with the safety management systems philosophy, continuously improve. The team’s collaborative approach is enabling the development of innovative “call windows” and train scheduling in key locations.

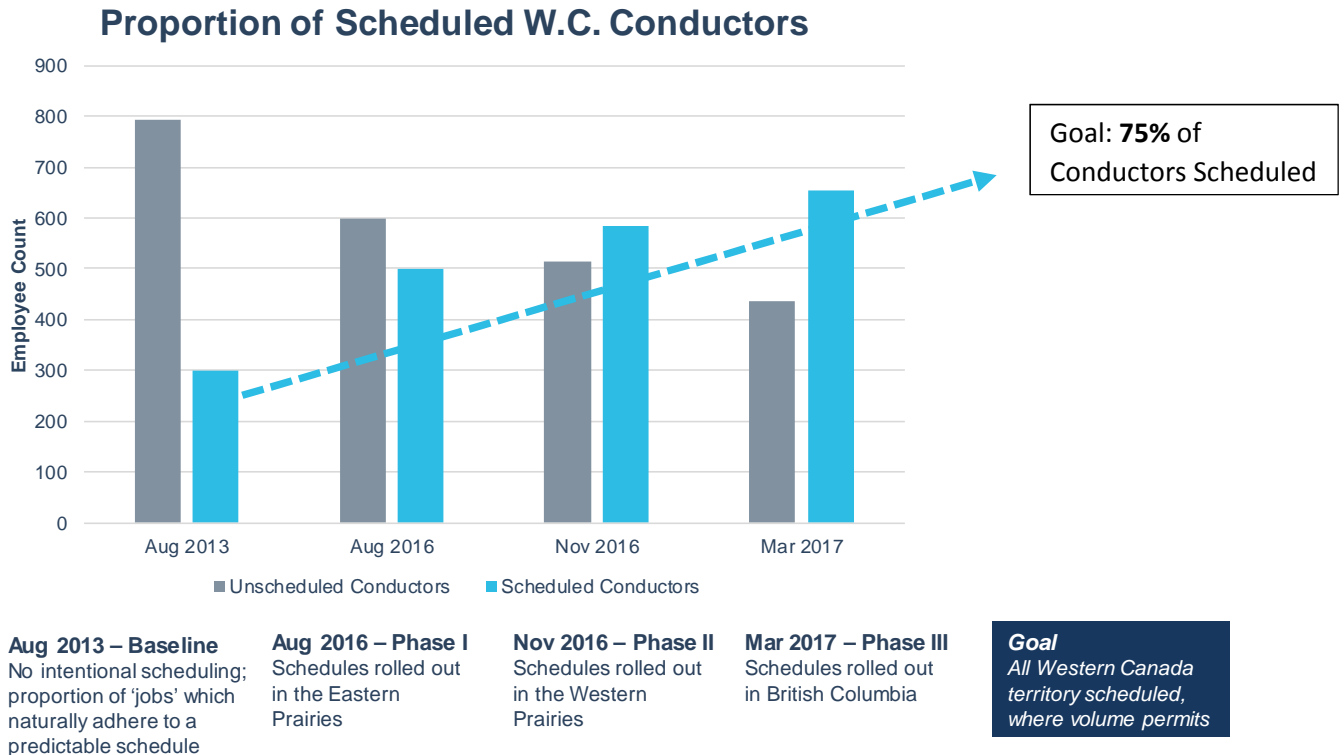
The committee has also leveraged the expertise of an independent fatigue management specialist who continues to ensure a scientific basis for all fatigue risk management decisions.

Furthermore, the TCRC and CN are committed to communicating information to, and improving fatigue awareness, for both employees (e.g., value of controlled rest during duty) and their families (e.g., family commitment to providing an environment for the employee to be rested).

Implementation of Call Windows and Scheduling

TCRC and CN are encouraged with the results thus far of a joint union/management task force project through which predictable call windows were designed and implemented. Employees involved in the project are now aware of when they can be expected to be called to work 2 weeks in advance through these windows.

The scheduled windows have been implemented on a terminal-by-terminal basis in Western Canada since August 2016. The scope of this initiative and potential benefits continue to increase. For example, the number of employees working in scheduled call windows has shown a major improvement with an increase from 28% to 61%.



Multiple benefits are currently resulting from the call window project and many more are expected, including:

1. Employees have a much greater understanding of when they will be called to work so they can plan their lives and sleep accordingly.
2. Improved opportunities for sleep and rest.
3. Improved retention of new employees by making it easier to integrate work and personal lives.
4. A much better understanding of crew utilization which facilitates crew planning.
5. Fostering a collaborative environment between union and management on this important initiative.
6. Improvements in employee alertness and reductions in fatigue.
7. Continuous improvement of railway safety culture.

The reductions in employee fatigue levels due to the call window project are being validated through objective and subjective data that is being collected before and after call window implementation. Volunteers from a wide variety of jobs and locations have been recruited to help collect this data.

Objective data is being gathered through research quality actigraphs called Readibands. These devices are being worn by the employees and are similar to wearable technology such as the Fitbit and Jawbone, with one important exception; they are significantly more accurate at recording sleep-wake patterns. In addition, the Readiband only monitors activity, is not available commercially and the accuracy of its sleep-wake pattern recording capabilities has been validated.

Subjective data is being gathered through written sleep-wake-duty journals. Volunteers are using the journals to record information about timing of sleep periods, total sleep time, timing of duties and duration of duties.

Readiband and journal data is being consolidated to ensure confidentiality of the volunteers. The data is being analyzed by the independent fatigue management specialist who will calculate the expected improvements in employee performance and safety as well as the reductions in fatigue resulting from the call windows. The data will also be used by the fatigue specialist to develop recommendations for continuously improving the overall system for fatigue risk management.

Additional Strategies

While the call window project will result in benefits for many employees, others may not experience similar advantages. Individual differences in susceptibility to fatigue and its performance impairments as well as practical limitations to implementing call windows will likely influence how much benefit any one particular individual will experience.

TCRC and CN are committed to continuously improving the health and safety of all employees. This means that additional components of contemporary fatigue risk management systems will and are being developed. For example, TCRC and CN have recently formed a working group with the objective of using communication strategies, training, and education in order to help employees, and likely their families and support networks, to better understand the risks associated with fatigue-related performance impairments, the six fatigue risk factors, and how to use an individualized approach that incorporates prevention and countermeasure strategies to better manage fatigue.

Furthermore, TCRC and CN agree that it is essential for employees at all levels of the company to understand and commit to considering fatigue when their decisions or actions could affect the fatigue levels and safety of other employees. The communication strategies, training and education will be used to support this agreement.

Concluding Statements

The willingness of TCRC and CN to work together has delivered tangible progress, which improves safety and employees' quality of life and is assisting in evolving railway organizational culture.

Consistent contemporary fatigue risk management systems, scientifically-supported and data-based conclusions underpin the TCRC-CN decision making process.

The collaborative work of the steering committee is building trust between management and the union, which will extend beyond the benefits of this program.

TCRC and CN believe that current work/rest rules need to reflect the science of fatigue to ensure rail safety. It is understood that the work/rest rules in and alone will not completely mitigate the risks of fatigue but are needed to provide the regulatory baseline that other strategies can be layered upon to best manage fatigue.

Training and education for both the employee and their family and support network will allow for the implementation of individualized strategies to mitigate fatigue.