

FATIGUE MANAGEMENT

Fatigue continues to pose a risk to safety in air, marine, and rail transportation because of its potential to impact human performance in ways that can lead to accidents.

The situation

From the early 1990s until mid-2025, the Transportation Safety Board of Canada (TSB) made findings about sleep-related fatigue in 119 occurrences: 49 in the air transportation sector, 38 in marine, and 32 in rail.¹

The issue of fatigue management in freight train operations has been on the Watchlist since 2016 and was expanded in 2018 to include air and marine transportation.

Even though regulations and procedures have work and rest provisions, work scheduling continues to be a challenge for employers and employees in the air, marine, and rail transportation sectors. If **regulations and procedures** do not consider all the factors that are known to contribute to fatigue, employers will not have the guidance they need to mitigate the risk that fatigue poses to their employees.

Work and rest provisions alone are insufficient in and of themselves. If operators are not required to implement **fatigue management plans**, crews may work while fatigued, which increases the likelihood of operational errors. If crews are not **trained** in fatigue awareness, there is a further risk that they will be unable to prevent or identify and mitigate the risks or symptoms associated with fatigue. For fatigue management to be effective, employees must understand the risks, feel supported in reporting without fear of reprisal, and have the opportunity to remove themselves from duty when unfit to work.

The call for change

Watchlist issues are complex and require coordinated action from operators, regulators, and other stakeholders. While some progress has been made, much more is needed.

¹ The 2025 Watchlist considers all types of findings made in TSB reports (Findings as to causes and contributing factors, Findings as to risk, and Other findings). These categories differ in historical reports. The 2025 Watchlist also considers fatigue both in crew and in other actors, such as Air Traffic Controllers. Total counts of findings will therefore differ from prior issues of the TSB Watchlist.



Effective fatigue management and the reduction of associated risks require profound changes in attitudes and behaviours, at both management and operational levels. This can only be accomplished through sustained awareness training and the implementation of fatigue management plans that encourage employers and employees to take responsibility for preventing fatigue-related occurrences.

To support this cultural shift, the issue of fatigue management in transportation will remain on the Watchlist until several actions are taken in Canada's air, marine, and rail transportation sectors.

Air sector

Flight operations often cross multiple time zones and involve long duty periods, making fatigue a critical safety risk.

Consultations have highlighted disagreements within the industry over the use of fatigue risk management systems and exemptions, with some associations warning that weak oversight could undermine safety protections.

Ongoing concerns reported to the TSB, especially among smaller and regional operators, underscore that fatigue management remains a preoccupation and a significant safety risk.

TSB investigation [A22O0161](#) showed that even when operators comply with regulations, extended duty periods can increase pilot fatigue, demonstrating that rules alone cannot eliminate risk.

Action taken

The Canadian Aviation Regulations were updated, and fatigue management requirements for air operators took effect in 2020 and 2022. They provide two approaches:

- Prescriptive: Fixed limits on flight time, duty periods, rest periods, and time free from duty.
- Performance-based: An operator can vary from the prescriptive approach by using a fatigue risk management system to predict and prevent flight crew fatigue.

Action required

Fatigue management in air transportation will remain on the Watchlist until TSB investigations and data show that the regulations are effectively addressing fatigue-related risks.



Marine sector

Fatigue continues to contribute to occurrences worldwide and remains a high concern in the marine industry. In Canada, enforcement of work and rest provisions on domestic vessels has been inconsistent and the *Marine Personnel Regulations* do not apply to approximately 95% of fishing vessels. Existing domestic provisions are weaker than international standards and still allow schedules such as six hours on and six hours off, which can cause chronic fatigue.

International research shows that existing work and rest rules are inadequate, with many seafarers working with substantial levels of fatigue and, in some cases, falsifying hours of work and rest records to appear compliant.

In the past three years, the TSB has published findings related to fatigue in five² marine investigation reports, three of which involved fishing vessels under 100 GT—vessels not currently subject to work and rest provisions. These findings highlight the ongoing risks posed by fatigue, especially in operations that fall outside the current regulatory framework.

Action taken

In March 2024, TC launched free fatigue awareness training delivered through the Canadian Centre for Occupational Health and Safety. This training will not be mandatory, however, until the updated *Marine Personnel Regulations* come into force.

Action required

Fatigue management in marine transportation will remain on the Watchlist until

- TC requires that watchkeepers whose work and rest periods are regulated by the *Marine Personnel Regulations* receive practical fatigue education and awareness training;
- vessel owners implement fatigue management plans that include education and support to seafarers in reporting, managing, and mitigating fatigue;
- domestic work and rest provisions are updated to include fishing vessels under 100 GT and to reflect current fatigue science and align with international standards.

Rail sector

Fatigue is well recognized and well documented in the rail industry and has been a finding in 32 rail occurrences between 1990 and 2025. Despite regulatory efforts, risks remain because of unpredictable start times in freight operations, long duty hours, rotating day and night shifts, and provisions subject to collective bargaining.

² [M22A0332](#), [M21C0214](#), [M21A0065](#), [M20A0434](#), [M20P0229](#)



Although the *Duty and Rest Period Rules for Railway Operating Employees* was approved by TC in 2020, the rules apply only to operating employees and do not always reflect the latest fatigue science with respect to daily and cumulative work and rest periods. Several TSB investigations between 2014 and 2025³ have shown that fatigue also affects non-operating roles essential to safe railway operations, such as rail traffic control and maintenance-of-way staff.

Between 2011 and mid-2025, the TSB issued 16 safety advisories or information letters to TC on fatigue-related concerns. While TC has acknowledged the need for a more comprehensive approach, progress has been slow. Proposed *Fatigue Management System Regulations* were consulted on in 2022; although TC plans to integrate these into the *Railway Safety Management System Regulations*, no firm timeline has been communicated. Until these amended regulations take effect and are enforced, fatigue-related risks may remain unmitigated.

Action taken

TC and railways have now fully implemented the *Duty and Rest Period Rules for Railway Operating Employees*, which came into effect in May 2023 for freight railways, and in November 2024 for passenger railways. However, industry concerns continue about the lack of advance notice and the location of reset breaks. Railways submitted their fatigue management plans by November 2022, and these plans have now been implemented.

Action required

The issue of fatigue management in freight rail transportation will remain on the Watchlist until

- TC migrates the provisions of the proposed *Fatigue Management System Regulations* into the *Railway Safety Management System Regulations*, 2015;
- railways demonstrate to TC that they have implemented effective fatigue management plans; and
- TC ensures regulatory requirements for crew scheduling effectively address operational realities, and railway operators demonstrate compliance with these requirements.

³ R16H0024, R16D0076, R15V0003, [R14W0256](#)