



TRANSPORTATION SAFETY MANAGEMENT SYSTEMS

STILL NOT RIGHT

Bruce Campbell | November 13, 2020



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EXECUTIVE SUMMARY

The purpose of this report is to analyze the Safety Management Systems (SMS) oversight regime and related transportation safety issues. It covers aviation, rail, marine and the transportation of dangerous goods. It examines Transport Canada's policy, legislative and regulatory changes, industry positions and actions, and the positions and actions of both public and private sector unions. The report reviews briefs of the Union of Canadian Transportation Employees (UCTE), parliamentary testimony, documents of the Auditor General of Canada and other records. It draws conclusions and makes recommendations for strengthening SMS as well as related safety and legislative measures.

The policy context within which SMS were implemented in all transport modes is assessed and examined against current realities. These systems came into being during the neoliberal, or free market, era which has dominated policy making for the last four decades. The agenda has been advanced through deregulation, privatization, austerity and corporate-led globalization.

Developing and enforcing regulations are a core function of government.¹ They are put in place to protect the public and ensure their health, safety and the environment. They are not red tape nor job and investment killers. In general, benefits to public safety far outweigh costs that may be incurred by the regulated industry, and industry also benefits from protections. The public servants who propose, implement, administer and enforce regulations are fulfilling an essential role as guardians of the public good.

As confirmed by polling data, the Canadian public overwhelmingly does not trust corporations to regulate themselves, believing businesses are more concerned with profits than safety. Only after a major disaster does the public lose confidence in the ability of governments to protect the public interest, as it is often after such disasters that serious flaws in regulatory regimes come to light.²

Government regulatory policy documents shape the decisions, proposals, actions and resources of all regulatory agencies within government. The Conservative government's 2012 Cabinet Directive on Regulatory Management subordinated public safety to business cost priorities. Its centrepiece was the one-for-one rule, which mandated that regulatory agencies offset each proposed new or amended regulation by removing at least one existing regulation. Regulations were seen as a cost to

business, and the rule added a new level of hoops, prolonging delays and compounding the challenges for already overstretched regulatory agencies. The Liberal regulatory policy document, the Cabinet Directive on Regulation that came into effect in September 2018, is not a significant departure from its predecessor.

Corporate power has dominated the policy, legislative and regulatory processes in Canada, even though the regulator's primary obligation is public protection. When there is a conflict between economic priorities and public protection, as is seen in the transportation sector, safety is frequently compromised.

The transportation sector suffers from regulatory capture whereby regulations benefit the regulated industry at the expense of the public interest.³ Often shielded from public view, corporations block, delay, dilute and reverse regulations that adversely affect their profits—and in effect they regulate themselves. Capture is more likely to exist alongside an under-resourced regulatory agency that is either prevented from and/or unwilling to act as a countervailing power to industry. This is seen within Transport Canada following years of budgetary cutbacks and insufficient expertise to adequately develop regulatory proposals and evaluate industry demands.

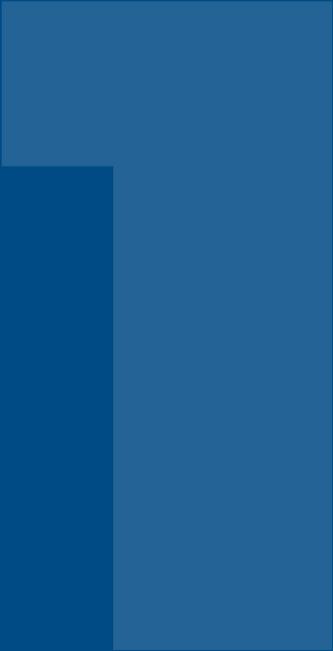
In an environment of capture, the regulator sees itself as a collaborator or partner. Voluntary measures often substitute for regulations. Government spends most of its time building trust with the industry sector rather than with the public. Leaders in regulatory agencies often identify with industry priorities, which is compounded by known ideological bias of their political masters. The problem is further exacerbated within transportation due to so-called cooperative rule making that takes place through two joint industry-government bodies: the Canadian Aviation Regulation Advisory Council and the Canadian Marine Advisory Council.

Company self-regulation combined with infrequent audits of SMS allow the government to claim it can thread the needle between protecting the public interest and promoting a competitive economy. Donald Savoie called this the Forrest Gump approach: "The rules are there but one can choose to ignore them."⁴

Deregulation has been underway in Canada for almost four decades. Since the mid-1980s Nielsen Task Force on Program Review, there have been multiple commissions, committees, advisory bodies and regulatory policies under both Conservative and Liberal governments. There has been a steady erosion in the protective function of regulations. Ultimately,

democracy has been degraded as corporate interests disproportionately influenced the political agenda and frustrated the public good.

Regulatory failures have been contributing factors to major disasters. Despite the distinctive features of each of these disasters, there has also been much in common among them. These include vague or nonexistent regulations; the lack of inspections, enforcement tools, penalties and corporate will to operationalize corrections; a dysfunctional regulator and evidence of regulatory capture. Regulatory failures have endangered the safety of workers and communities, leading in extreme cases to disasters so ingrained on the minds of Canadians they have become part of our common language. These include Lac-Mégantic, Westray Mine, Ocean Ranger, Cougar Helicopters, Ornge Air Ambulance, Dryden Air, listeriosis, Walkerton and more.



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**SAFETY
MANAGEMENT
SYSTEMS (SMS)**

Though SMS have become the centerpiece of the transportation safety regulatory regime, individual companies' SMS are protected under commercial confidentiality and thus not accessible to outside scrutiny.

SMS are generally understood to be a “... formalized framework for integrating safety into the daily operations of an organization including the necessary organizational structures, accountabilities, policies and procedures.”⁵ They are generally seen as a step forward in improving safety as long as they are properly constructed and implemented. SMS were introduced in the marine sector in 2001, have been mandatory for all railways in Canada since 2002 and brought into the aviation sector in 2005. In developing SMS for the aviation and marine sectors, Canada followed international protocols. Consequently, SMS oversight has been delegated to international classification societies which are often in conflict of interest situations. There were and are no such international protocols to follow for the rail sector.⁶

Marine regulations in Canada apply the International Safety Management Code, which was established by the International Maritime Organization. Air SMS regulations are based on an International Civil Aviation Organization (ICAO) framework (Annex 19). Their approaches are similar, though not identical. Of note, Transport Canada delegated licensing and safety oversight to the industry associations, violating the ICAO best practices framework.

SMS regulation seeks, to a greater or lesser extent, to reduce prescriptive measures to allow regulated entities flexibility in the way they address potential safety issues. This performance-based regulation emphasizes results while leaving it to the regulated entities to determine how best to achieve the results. The contrast between prescriptive regulation and newer forms of system-based or performance-based regulations raises fundamental accountability issues.

The introduction of an SMS regime was characterized as a win-win-win—good for business, less costly for government and a way to improve safety. The assumption was that with one in place, regulated companies would automatically be compliant. The key elements of an effective safety culture and careful risk assessment would automatically follow.

Senior Transport Canada officials and politicians have repeatedly—before committees and in public—stated that SMS was to operate over and above traditional regulations, rather than substitute them. Nevertheless, SMS implementation has been inconsistent with this claim.

Resources continue to be squeezed, and inspections reduced or eliminated, replaced by document review—a paper exercise.

Justice Virgil Moshansky, who led the public inquiry into the 1989 Dryden Air crash, testified in 2017 before the House of Commons transport committee's investigation of aviation safety.⁷ He was categorical that the Canadian government's continued failure to comply with ICAO's regulatory oversight requirements is rooted in the failure to adequately fund Transport Canada's aviation safety directorate.

According to York University professor Mark Winfield, federal regulatory oversight has become increasingly focused on overseeing the implementation of corporate management systems rather than on field inspections. *"The role of regulation ceases to be primarily about government inspectors checking compliance with rules and becomes more about encouraging the industry to put in place Safety Management Systems that are then scrutinized by regulators."* He concludes that under the current conditions of resources deprivation, SMS should be suspended and safety directorates should revert to conventional oversight.⁸

In rail, inspectors are doing both inspections and SMS audits, though inspections have diminished greatly. In aviation, virtually all the inspectors are doing SMS audits rather than inspections.

In the fall 2013, following the Lac-Mégantic disaster, then Transport Minister Lisa Raitt asked the House of Commons Committee on Transport to conduct a safety investigation on all modes of transportation, with particular emphasis on SMS and the transportation of dangerous goods. The committee produced its final report in March 2015. In 2014, UCTE appeared before the committee and made several observations and recommendations on SMS and related safety measures, including:

- SMS ought never be a replacement for direct and unannounced inspections by Transport Canada inspectors with power to revoke licenses and impose monetary penalties.
- Inspections, not SMS audits, should be the primary means by which companies are held accountable to laws and regulations ensuring safety.
- SMS audits and inspections are completely different functions. Audits and inspections (and the inspectors doing them) should be separated within each modal safety division. Without separation, audits become a substitute for inspections.
- Ministerial delegations to private companies or industry associations should not be permitted.
- Inspector-to-staff ratios by department and by mode should be

increased significantly, and new inspectors hired should have specialized safety knowledge.

- Accident and incident reporting by inspectors and company officials should be mandatory for all modes. There should be a searchable, online database accessible to the public.
- Transport Canada should set time limits for implementing Transportation Safety Board (TSB) recommendations, and TSB implementation working groups should include working-level inspectors.
- The most important multimodal principles that should be made available in Canada are whistleblower protections enshrined in law, such as exists in the US, with an independent office established for these protections.
- “Highest level of safety” benchmarking should be required and written into transport safety law regulation guidelines and policies.

a. ENFORCEMENT/COMPLIANCE

A history of non-compliance demonstrates the inability of regulators to enforce transportation safety rules. The regulations have thus been effectively diluted.

To carry out their role effectively, regulators should be independent from political control and have quasi-judicial powers. They need effective enforcement measures in which the cost of non-compliance is a deterrent to violations. Regulators should have the ability to gather data, set standards and change behaviour—elements which are undermined by shrinking regulatory budgets and corporate capture⁹ According to Doern et al.: “... *regulatory independence has been harmed unnecessarily and unwisely by ministerial incursions on specific decisions by boards and commissions and, perhaps more seriously, by weakening the scientific and evidence-based resources that crucially underpin such delegated governance.*”¹⁰ They continue: “*Arguably, the greatest threat of this kind has come from efforts to muzzle scientists in regulatory departments by subsuming the public service advice they provide under the shackles of government communications strategies.*”

Enforcement tools are limited, as are penalties for non-compliance. The burden of proof is on inspectors. According to a former insider, inspectors are judged on the number of orders they do not issue: “*Every regional Transport Canada safety inspector or manager knows s/he is putting their career on the line every time they sign a notice and order on an*

issue that the corporation is prepared to defend to the legal limit and beyond.”

On paper, inspectors can file administrative penalties, require corrective actions and, when the circumstances justify it, subject companies to enhanced monitoring. But the practice provides another story. An aviation inspector representative testified enforcement action almost never takes place anymore. In the case of rail safety, the minister’s ability to make corrective orders with respect to safety risks is limited by requirements for extensive consultation with the affected railways, and orders are stayed while under appeal.

As told to the author by the former insider: “The most important thing regarding SMS is the ability and will of auditors and inspectors to enforce compliance. The question is: How often have [enforcement tools] been used and how effective have they been? Have the companies been able to appeal and delay indefinitely? ... evidence is not encouraging. Transport Canada regularly loses at the Transportation Appeal Tribunal of Canada and has had to strike down notices and orders.”

b. ACCOUNTABILITY

Change in SMS accountability in Canada has corresponded to a shift in financial and organizational priorities. Altered delegations of responsibility, finger pointing, reduced ministerial responsibility for the actions of public servants and budget cuts, among others, have effectively reduced the emphasis on worker and public safety.

That Canada was devolving accountability in general was perhaps best underscored by Privy Council’s 2011 guidelines which weakened ministerial accountability. Ministers today are not required to accept responsibility for every matter within their departments.

In theory, industry as well as the regulatory agency are accountable for non-compliance. Primary responsibility for the regulations is delegated by elected officials to regulatory agencies which are, in principle, accountable. Regulated industries are expected to comply with rules and requirements, and in some sectors, responsibility for rules is even delegated by the regulator to the industry, with ministerial approval. On the question of budgets, the Prime Minister together with cabinet—especially the finance minister—sets the overall level of resources allocated to each department, and it is the ministers who are responsible for their departments’ funding priorities.

This tenet supporting the dispersal of accountability has become

entrenched into SMS in Canada. Quigley et al. describe SMS as they exist today as a form of blame shifting whereby delegating responsibility for risk assessments and risk management to the companies themselves provides cover for the government from its responsibility for failures.¹¹ In an era of government fiscal restraint, agencies no longer have the resources for on-site inspection, enforcement and prosecution. In this environment, they use audits, norms and preferred practices while government masks accountability with euphemisms such as “collaboration” and “stakeholder partnership.” After an accident, blame language dominates and is focused on errors by frontline workers.

They conclude that in the transportation sector: “... *risk regulation regimes are thus characterized by concentrated power, collaboration, dialogue, and negotiation between government and industry associations....regulatory regimes lacked the traditional regulatory tension. The dichotomy between regulator and regulated has been supplanted by a situation in which government is content to use industry self-interest as an impetus for risk management... Government’s role is largely rhetorical; it makes claims about its rigorous regulatory practices, but in reality the substantive work of risk regulation is left to industry.*”¹²

The dysfunctional safety culture that has resulted was horrifically exemplified in the Lac-Mégantic disaster. Montreal, Maine and Atlantic Railway, the company that operated the train that derailed and exploded in the town centre, was given permission to operate single-person trains by a Transport Canada official who was on a lower rung of a convoluted accountability ladder. He was working within an operating framework and safety regulatory regime that had previously been approved and put in place by persons well above him in the bureaucratic hierarchy and that had ultimately been approved by the minister.

According to Quigley et al.: “... *organizations learn lessons consistent with the survival of their organizational culture; they are often deaf to lessons that challenge it.... In other words, organizations learn only what they need to in order to be stable.*”¹³ This was—and remains—entrenched within Transport Canada where communication was fragmented, information not shared. A maze of boards, committees and blurred and contradictory reporting relationships were seemingly designed to avoid accountability, especially at the higher levels. The governance structure provided protection from direct accountability.

It has become extremely difficult, if not impossible, to hold senior officials, cabinet ministers or the Prime Minister legally accountable for major accidents resulting from regulatory failures. The same applies to company executives, boards of directors and owners.¹⁴ Especially in criminal violations, frontline workers are usually the ones charged. According to University of Ottawa law professor Jennifer Quaid, in an interview with the author: “*Criminal law has a very individualistic sense*

of causation... The law ignores a lot of things that make choices less free—in particular, those things that constrain individual choices—in ways that suit the prevailing power structures in a neoliberal economy.”¹⁵

c. SAFETY CULTURE

Hierarchical structures, such as those seen in Transport Canada and transportation companies, are by their nature at odds with the development of an effective, workable safety culture.

Achieving an effective safety culture is arguably the most important goal of SMS. According to Professor Reason: *“An effective safety culture transcends the psychology of any one individual where the possibility of forgetting to be afraid is common. It can compensate for this by providing the reminders and ways of working that go to create and sustain intelligent wariness.”¹⁶*

What is safety culture?

The International Air Transport Association sees safety culture as: *“... the set of enduring values and attitudes regarding safety, shared by every member of every level of an organization”¹⁷*

Transport Canada’s Civil Aviation Safety Directorate provides a safety culture checklist based on the work of professor James Reason that can be used by organizations for self-assessment.¹⁸

The Transport Canada SMS Working Group examining rail safety has noted: *“Organizations with a positive safety culture are characterized by communications from various stakeholders founded on mutual trust, by shared perceptions of the importance of safety and by confidence in the efficacy of preventive measures.”¹⁹*

According to the 2007 *Railway Safety Act* Review Panel, a safety culture is: *“... one in which safety values are firmly entrenched in the minds of managers and employees at all operational levels and respected on a daily basis in the performance of their duties.”²⁰* In an organization with a well-entrenched safety culture, frontline employees will not hesitate to report any hazards and their reports will then be forwarded to senior management.

Implementing a safety culture that translates into real, on-the-ground safe practices can be exceptionally difficult within hierarchical structures.

By nature, large transport corporations are hierarchical and often operate in a blame and under-reporting environment. The inevitable impediment to implementing an effective safety culture within a hierarchy can be offset by CEOs requiring SMS teams to have executive power that ensures compliance with their SMS plans, over the objections of middle management if necessary, and ensuring that the independent knowledgeable auditors that do the semi-annual or annual evaluations have absolutely zero connection with the corporation they are auditing.

Monica Haage states that the regulator's own safety culture should provide an example to companies of what is required.²¹ Regulators can provide support by helping regulated organizations recognize their cultural weaknesses and strengths; regulators should undertake their own safety culture assessments, and regulators should have an effective management system if they are asking licensees to have effective SMS. The ability of Transport Canada to provide the kind of example required may be lacking.

Independent analyses have characterized the department as rigidly hierarchical and highly siloed with poor internal communication and frequent turf wars between policy, operational, regional and safety divisions, as well as between headquarters and regional offices. Professor Valiquette L'Heureux termed it an "*organizational narcissism*" that can result in turf wars compromising the safety mandate. Studying the Lac-Mégantic tragedy, she concludes that senior Transport Canada managers were preoccupied with meeting the government's budget targets and protecting their own turf. Their priorities determined how the reduced departmental budget mandated by the Conservative government of the day was distributed, and the cuts fell disproportionately on sections responsible for safety. Positions were left vacant or merged, and experts were replaced by less qualified staff.²²

d. WHISTLEBLOWER PROTECTIONS

Whistleblower protections are another essential component of SMS. Whistleblower protection is necessary if workers are to report safety violations. History shows, however, that protections afforded by regulation, rather than legislation, are ineffective, making corporate safety regimes hugely problematic.

The Dryden Air crash of 1989 provides a solid example of reprisals employees face when they alert their superiors to SMS shortfalls. Shortly

before the crash, Transport Canada's Superintendent of Air Carriers warned senior management about the lack of inspectors and resources. Those warnings fell on deaf ears. Justice Moshansky, who headed an inquiry shortly after the crash, told a Commons Transport Committee hearing in 2017 that the superintendent was dismissed as a fearmonger. Furthermore, industry workers who had testified publicly at Justice Moshansky's inquiry were suspended for speaking out. Similarly, red flags were raised prior to the Lac-Mégantic disaster regarding the risks posed by the exponential increase of moving oil by rail, but again such warnings were not heeded.

Despite a history of having their warnings ignored at best, public servants and others continue to speak out. Former Transport Canada marine inspector and union representative John Dalziel, together with the president of the Public Service Alliance of Canada, wrote to the Transport Minister in 2011 to state that inspectors feared reprisals when they reported violations. Former Transportation Safety Board investigator Steve Callaghan, interviewed by the author, described as "a farce" the 2015 Railway Safety Management System Regulations requiring railway companies to establish a policy enabling employees to confidently report safety concerns. Simply put, employees don't use these so-called protections because history has shown them time and again that they have reason to fear reprisals.

The 2016 Commons committee report *An Update on Rail Safety* recommended that Transport Canada review whistleblower protection provisions to determine if their inclusion in SMS provides the appropriate framework for raising operating safety issues. Despite that recommendation, little has been done to strengthen whistleblower protections needed by employees to feel, and be, safe when reporting dangerous practices. There remains a marked inability for employees to come forward without fear of reprisal—an essential component of workable SMS.

e. RISK ASSESSMENT/RISK MANAGEMENT

Bona fide risk management has been replaced by business-friendly guidelines and voluntary codes. The least-cost option for business is the recognized default when it comes to achieving policy objectives, while the higher standard of the precautionary principle is given lip service.

Risk management involves identifying all operational hazards, assessing the probability of a hazard occurring and subsequently taking action to reduce hazards and mitigate harmful outcomes. Kathy Fox, who later

became the chair of the Transportation Safety Board (TSB), analyzed SMS implementation and observed the following company risk management practices as contributing to accidents²³:

- no formal risk analysis conducted
- risk analysis conducted but hazard not identified
- hazard identified but residual risk underestimated
- risk control procedures not in place, or in place but not followed
- issues related to equipment design and/or maintenance practices
- inadequate tracking or follow-up of safety deficiencies
- insufficient personnel for the task at hand, heavy workload, inadequate supervision
- insufficient training or lack of qualifications for the task to be performed
- conditions conducive to physical or mental fatigue
- ineffective sharing of information before, during or after the event, including verbal communications, records and other documents
- gaps created by organizational transitions affecting roles, responsibilities, workload and procedures

Not mentioned in the analysis is the failure of regulators to monitor and correct company deficiencies via proper oversight in order to prevent these accidents from occurring.

A key weakness of the Conservative government's 2012 regulatory policy, as well as that of its Liberal predecessor, was in the way risk management and assessment were interpreted and, therefore, executed. A 2001 Royal Society of Canada expert panel had asserted the primacy of the precautionary principle in protecting the public health, safety and the environment—err on the side of caution, identify potential risks, don't deploy until risk uncertainties are greatly reduced, and place the primary burden of proof on companies to demonstrate that their products and activities do not pose unacceptable risks. Although at times given lip service, the precautionary principle was not widely adopted in the transportation sector.²⁴

The 2008 Auditor General of Canada audit on civil aviation safety reported that Transport Canada had underestimated the risks of the transition to SMS as well as the impact of moving resources away from traditional oversight activities. The report was highly critical of a directorate already having difficulties managing its human resource issues while trying to introduce an additional layer of safety through the SMS. It noted that the department had not identified the impact of implementing SMS on the

work of its aviation safety inspectors.

The report also observed that Transport Canada did not do a national risk-based approach for inspections and audits. It questioned Transport Canada's ability to hire and train qualified inspectors and to specify the number of inspectors needed to meet regulatory requirements. It urged the department to specify the balance between conventional and SMS oversight and to establish a standard for acceptable level of oversight activity.

The 2012 Cabinet Directive on Regulatory Management continued this sidelining of the precautionary principle by, for example, instructing regulatory agencies to impose on businesses the least-cost options to achieve policy objectives. Effectively, business-friendly guidelines and voluntary codes were preferred to regulation.

The year following the directive, the Auditor General issued a rail safety report that identified defective SMS audits. Follow-up was lacking as was the understanding of needed resources and the ability to target resources to high-risk companies. The report noted: *“Nor were Transport Canada’s own risk assessments taking into account future risks that the industry might face, such as the increase in the transportation of dangerous goods.”*

Sadly, there have been few lessons learned from the findings of auditors general, not to mention the loss of life from transport sector accidents. A March 2020 TSB advisory warned Transport Canada that increased risks associated with the operation of key trains are not being addressed by the current track safety rules, which were set back in 2012. Furthermore, despite longer and heavier trains, upgrades to track standards were not part of the key route rules established in 2016.

f. FATIGUE MANAGEMENT

“... crews don’t always get enough restorative sleep, which can impair human performance. To fix this, there needs to be a profound change in attitudes and behaviours, both at the management and operational levels. That means taking steps such as: awareness training; fatigue management plans; modernizing duty-time regulations for train crews, marine watchkeepers, and pilots; and making sure that, in general, work-rest rules are based on science—and not just the way things have always been done.”

—Kathy Fox, Chair, Transportation Safety Board (TSB)
Watchlist 2018—Opening Remarks

Since 1994, the TSB has identified sleep-related fatigue as a contributing or risk factor in over 90 occurrences: 31 in rail, 28 in marine and 34 in aviation. Fatigue is also an issue in the fishing industry. In rail, the vast majority of fatigue issues involve crews operating freight trains. Since 2011, the TSB has directed 16 rail safety advisories and letters to Transport Canada regarding employees' concerns about fatigue.

The risks associated with sleep deprivation in the rail sector were identified back in 2007 with the *Railway Safety Act Review Commission* report. That report noted and recommended: *"The current work/rest rules do not provide a satisfactory baseline framework for managing the risks associated with fatigue in rail operations. The rules should be amended to better reflect current science on fatigue management. A robust system of fatigue management plans is needed. Transport Canada should audit them as it does for safety management system plans."*

Despite this historical understanding of fatigue's relationship to rail safety, the issue didn't manage to get traction until around 2016. Fatigue management made it onto the TSB Watchlist for the first time, and it was for rail. The Watchlist cited a US National Sleep Foundation study which found that many transportation workers reported not getting enough sleep because of work schedules that demanded too many hours at a stretch, or irregular hours.

In its 2016 report entitled *An Update on Rail Safety*, the House of Commons Transport Committee recommended: *"Transport Canada, in cooperation with the federal departments responsible for health and labour, take immediate action through a working group to develop options to improve the management of railway crew fatigue, including (but not limited to) (1) enhancing work/rest rules in Safety Management Systems (SMS); (2) removing work/rest provisions from collective bargaining processes; (3) introducing guidelines or a regulatory framework in place of SMS-based fatigue management; and (4) ensuring that fatigue rules are science-based."*²⁵

In-flight operations ignore fatigue science

In the aviation sector, the TSB has made several recommendations related to fatigue. It has recommended an update and modernization of flight and duty-time regulations, noting that existing regulations did not support the fatigue science on in-flight operations and didn't meet current International Civil Aviation Organization standards. In 2017, Transport Canada issued proposed amendments to the Canadian Aviation Regulations, but almost four years later, these have yet to be published as final regulations.

The proposed regulatory amendments drafted in March 2017 introduced time-of-day sensitivity to maximum duty times and rest periods. Both

were to be dependent on flight duration and the flight rules—whether visual or instrumental—being employed. The draft regulations allowed for a range of maximum flight duty times of between nine and 13 hours in a 24-hour period, dependent upon the time of day, flight duration and number of flights scheduled in a given flight duty period. Additionally, flight crews were to be limited to a maximum flight duty time of 112 hours in 28 days or 1,000 hours in any 365 days.

The Commons Transport Committee reflected on these proposed regulatory amendments in its June 2017 report, *Aviation Safety in Canada*. The committee recommended Transport Canada consult with stakeholders to take account of the implications of fatigue under specific regional operating conditions. Fatigue management rules should be based on the latest scientific evidence with safety as the number one concern, the report stated.

The import of expectations placed on tired employees must also be considered in an effective fatigue management program. During the hearings leading up to the release of *Aviation Safety in Canada*, unions pointed out that the existing Canadian ratio of passengers to flight attendants, 50:1, needed to align with the international standard of 40:1. Dave Clark—at the time UCTE Regional Vice-President, Pacific—testified that unlike the United States, flight attendants in Canada have primary responsibility for the evacuation of passengers and fire response within an aircraft, duties that require personnel to be alert and well rested. Fire crews are not authorized to enter aircraft in Canada, and at Canadian airports reporting fewer than 150,000 aircraft movements, no on-site firefighting capability is required, meaning municipal fire services would need to be called in an emergency.

Limited fatigue management standards for marine sector

In the marine sector, there are few, if any, standards for fatigue awareness and management. The approach varies substantially from one owner and type of vessel to the next. Labour shortages and economic imperatives may encourage individuals to work while fatigued, or possibly they have a perceived obligation to do so. In the fishing industry, 95% of vessels do not have any applicable work-rest provisions.

If marine crews do not get adequate rest or are not provided with opportunities to remove themselves from work when fatigued, the accident risk obviously increases. Recognizing this reality, the TSB issued a marine safety advisory letter on fatigue in 2013 and referred to six recommendations going back to 1999. It cited the need for marine operators to implement a fatigue management plan and fatigue awareness training for their crews. TSB also recommended that Transport Canada review the work-rest provisions in the *Marine Personnel Regulations* and ensure that work-rest schedules for the marine sector

are governed by those regulations, that marine employees receive fatigue education and awareness training and that vessel owners implement fatigue management plans.

In 2017 Transport Canada finally developed comprehensive fatigue management and awareness training materials for marine pilots. The department commissioned a comparative analysis of country practices regarding fatigue in the marine sector and also worked with the International Maritime Organization to revise international guidelines on fatigue. But the department has no plans to address fatigue management in small vessel and fishing operations.

In 2018, the TSB extended its Watchlist to include aviation and marine sectors in the management of worker fatigue safety issues. In doing so, the Board noted that employee fatigue was a major safety hazard in all sectors of transportation, a 24/7 industry whose crews can work long and irregular schedules across multiple time zones.

In May 2019, the government made another salvo to have railway companies finally address fatigue in a comprehensive way. Transport Minister Garneau asked railways to submit revised fatigue management rules. He was clearly underwhelmed by the rail sector response: *“Your submission fails to treat fatigue as an issue that impacts all people equally, regardless of the work they are performing, and ignores fatigue science.”* Railway companies were given until November 1, 2019, to submit new guidelines.

It stretches credulity that any corporation can have an effective SMS with a positive safety culture while, at the same time, it resists scientifically based fatigue management practices.

g. TSB WATCHLISTS

“Safety management systems (SMS) are an internationally recognized framework that allows companies to identify hazards, manage risk, and make operations safer—ideally before an accident occurs. Although the issue of safety management has been on the Watchlist since 2010, TSB investigation reports continue to note various deficiencies and concerns...”

Transportation Safety Board (TSB) Watchlist 2020

The TSB is an independent agency established by an act of Parliament in 1990, the result of a major restructuring of regulatory oversight bodies. It conducts investigations into accidents in all modes of transport. Although empowered to hold public inquiries, it has never done so. Its

investigations produce findings, including causes and contributing factors, and identify risk factors, but it is not empowered to assign blame or legal liability. It makes recommendations to regulators, and sometimes to industry, but cannot compel implementation of recommendations.

SMS have remained on the TSB Watchlist for three modes of transportation—air, marine and rail—since the first Watchlist in 2010. In the 2018 Watchlist, the TSB message was essentially the same as the original message almost a decade earlier: that SMS will remain on the Watchlist until:

- “Transport Canada implements regulations requiring all commercial operators in the air and marine industries to have formal safety management processes, and effectively oversees these processes;
- Transportation operators that do have an SMS demonstrate to Transport Canada that it is working—that hazards are being identified and effective risk-mitigation measures are being implemented; and
- Transport Canada not only intervenes when operators are unable to manage safety effectively, but does so in a way that succeeds in changing unsafe operating practices.”

True to this promise, safety management again appears as a key issue in the 2020 Watchlist issued October 29.

According to the TSB report on the Ornge Air ambulance helicopter crash, Transport Canada knew about the underlying contributing factors but did nothing to ensure they were corrected. This was the reason for inclusion of SMS on the 2014 Watchlist. According to TSB Chair Kathy Fox:

“Without a significant overhaul in the way Transport Canada oversees how companies manage safety—and how those companies in turn demonstrate that their safety processes are working—this issue is unlikely to go away anytime soon.”

Watchlist 2020

In its most recent Watchlist issued October 29, 2020, the TSB identifies eight key safety issues:

- [Risk of incursions from runway collisions](#)
- [Commercial fishing safety](#)

- [Following railway safety indications](#)
- [Runway overruns](#)
- [Safety management](#)
- [Fatigue management](#)
- [Regulatory surveillance](#)
- [Unplanned/uncontrolled movement of rail equipment \(new\)](#)

Releasing the report, TSB Chair Kathy Fox said fixing the problems will not be easy and will require government and industry to work together. Of note, the TSB said progress had been made in response time to its recommendations. Consequently, “slow progress responding to TSB recommendations”—first highlighted in the 2016 report—has been removed from the 2020 report. Time will tell if such optimism is warranted.

Noting in 2014 that its investigations of accidents in all modes found instances where SMS processes were weak or not used, the TSB recommended that Transport Canada require all operators in the air and marine industries to have formal safety management processes. The TSB report stated companies that do have SMS must demonstrate that it is working—that hazards are being identified and effective risk mitigation measures are being implemented. When companies are unable to effectively manage safety, Transport Canada must intervene to change unsafe operating practices. The Watchlist issued two years later, however, reported no progress in air and marine on this recommendation. It also observed that oversight needed to include proactive auditing of safety management processes, ongoing education and training, and traditional inspections to ensure compliance with existing regulations.

In air and marine once again, the 2018 Watchlist observed that there had been little progress on expanding the application of SMS to a broader range of companies. In aviation, although many companies had started to voluntarily implement SMS, over 90% of all commercial operators were still not required by regulation to have an SMS. Transport Canada has still not extended mandatory SMS coverage beyond those companies originally required to have it, though it has undertaken activities to improve oversight in the sector, including regular safety management assessments.

Similar hurdles exist in the marine sector. Despite repeated calls for SMS improvements from the TSB, many commercial marine vessels and the companies that operate them are also not required to have SMS. Watchlists have reported only minimal progress. Transport Canada’s response has been to begin a process to amend the Safety Management Regulations so they will also apply to vessels less than 500 gross tonnage,

which are not part of the *International Convention for the Safety of Life at Sea*. But the government has not committed to making SMS mandatory for small passenger marine vessels.

With respect to rail, Watchlists have noted that TSB investigations found that Transport Canada has at times failed to adequately identify companies' ineffective processes and to intervene in a timely manner. Moreover, when the department does act, there has sometimes been an imbalance between process audits and traditional inspections.

TSB reports that as of October 2018, 62 recommendations—more than 10% of which were issued more than 10 years ago—had not been fully addressed. The lack of progress is more pronounced in aviation and marine, though electronic train control still has not been implemented despite a 17-year-old TSB recommendation on backup safety defences.

Transport Canada has a history of dragging its feet when it comes to implementing TSB recommendations. That said, in its most recent Watchlist report, TSB notes improvement and has consequently removed slow response to its recommendations as a key issue.

h. RESOURCES/BUDGETS

When SMS came into effect it was presented as an additional layer to conventional regulation, but additional staff resources were not provided to oversee it. On the contrary, resources, human and financial, were squeezed. On-site, unannounced inspections dwindled and were replaced by document review.

Results from the Mulroney Government's mid-1980s Nielsen Task Force on Program Review signalled the beginning of the shift from direct oversight and prescriptive regulation toward so-called "smart regulation." Successive governments understood that this approach would result in fewer public servants and less cost to the national treasury. Not surprisingly, the watershed 1995 Liberal budget projected a 51% decrease in spending over three years at Transport Canada. Large numbers of regulatory personnel were let go.

When the Moshansky inquiry recommended in 1992 the introduction of SMS, it did so with the proviso that it be accompanied by an effective regulatory oversight and enforcement regime, in other words one that is properly financed and adequately staffed. While there was an increase in safety oversight resources afterwards, the implementation of aviation SMS in 2005 was followed by a resumption of austerity, the deterioration

and eventual elimination of direct oversight and a reduction in the number of inspectors, and their role changed to a bookkeeping function.

The Commission of Inquiry into the Air Ontario Crash at Dryden, Ontario—also known as the Moshansky inquiry—envisioned that SMS regulatory oversight and enforcement would be properly financed and staffed.

An examination of declining budgetary expenditures tells the story of a department responsible for safety in national transportation stripped over several years of any teeth.

The Rail Safety Directorate expenditures were essentially frozen at \$34-35 million from 2009 to 2017, during the height of the oil-by-rail boom. The Liberal government came to power in 2015 pledging additional resources for rail safety oversight. That finally happened when the directorate's expenditures were increased to \$46 million per year in three fiscal years starting in 2017.

In an assessment at the end of 2016, UCTE determined that while the rail directorate was hiring 12 new inspectors and SMS auditors, some of these hires were replacing retirees or otherwise filling vacant positions, and any government commitments made to maintaining inspectors represented a minor change. That said, additional hires seem to have taken place as the 2018 review report of the *Rail Safety Act* stated that the number of inspectors had increased to 141 as of November 2018, a 38% increase since fiscal 2013-14.

The budget for the Transportation of Dangerous Goods (TDG) Directorate was frozen at around \$13-14 million during 2009-13, and vital departmental expertise lost to layoffs or forced retirements. It had 35 dangerous goods inspectors in 2013, and only 16 were qualified for rail. These numbers had not changed since at least 2004, yet the workload certainly had. For example, in 2009, there was the equivalent of about 11 carloads of crude oil per dangerous goods inspector. By 2013, that ratio had increased to about 3,500 carloads per inspector.²⁶ While TDG Directorate expenditures increased to an average of \$32 million in the following five fiscal years, this occurred mostly because dangerous goods inspectors from rail, aviation and marine safety were being shuffled into the directorate.

In aviation, safety expenditures fell from \$252 million in 2008-09 to \$215 million in 2013-14. They continued to fall each year for the next five, reaching \$150 million in 2018-19. Marine safety expenditures also fell sharply, from \$87 million in 2009-10 to \$70 million in 2013-14 to \$56 million in 2018-19.

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AVIATION

A 2007 Bill to put a legislative framework around aviation SMS that was mostly consistent with the International Civil Aviation Organization (ICAO) never became law. Nor did a provision to strengthen whistleblower protections. The UCTE's recommendation that Transport Canada follow the US Federal Aviation Administration lead in announcing strong whistleblower protections and a separate accountability structure continues to fall on mostly deaf ears.

The bulk of civil aviation regulation in Canada takes place within the framework of the *Canadian Aviation Regulations*. The ICAO first recommended that SMS be adopted for aviation in 2000. Transport Canada was the first civil aviation authority in the world to introduce regulations requiring aviation companies to use SMS.

Canadian passenger air carriers that carry more than 20 passengers (and companies that maintain their aircraft) were required to start operating with SMS policies, processes and procedures in place in 2005, with full compliance by 2008. SMS regulations for airports and providers of air navigation services came into force in 2008 and 2009 respectively. The SMS requirements for airports were also phased in. All of Canada's largest airports and most of the smaller airports have now implemented SMS.

Transport Canada's Civil Aviation Safety Directorate is responsible for overseeing, administering and enforcing the policies, regulations and standards required for the safe conduct of civil aviation within Canada's borders. Under its 2009 safety programs partnership framework, Transport Canada delegated licensing and safety oversight to the industry associations. This violated the ICAO best practices framework which establishes paramount importance for the principles of independent regulatory oversight, direct state oversight, direct inspection and state direction for acceptable levels of safety. Moreover, Transport Canada established no oversight, audit and inspection plan for non-SMS certified carriers.

According to UCTE, the aviation directorate struggles with a greater degree of delegated responsibility and reduced direct inspections than the rail, marine or transportation of dangerous goods directorates.

Civil aviation inspections declined from over 20,000 in 2006-07 to 14,000 in 2010-11 despite the huge increase in air traffic. Departmental spokespersons say otherwise, but that is because they don't differentiate between audits and inspections.

In a 2012 follow-up to an earlier audit, the Auditor General stated that the time taken to implement reorganization coupled with resistance among some inspectors had hampered the department's efforts to fully implement a new surveillance program. The Auditor General noted the department was behind on inspections, not sure how many inspectors and engineers were needed and had not yet established a minimum acceptable level of surveillance. A number of weaknesses related to data quality as well as the level of surveillance were also highlighted. In short, the Auditor General concluded human resource issues were a continuing problem.

The 2009 UCTE report *What's Not Right*, while supporting SMS in principle, also cited major reservations about Transport Canada's approach to aviation SMS. The union recommended a moratorium on implementation until there was a clear requirement to provide separate and accountable audit and inspection roles as well as until there was a clear standard for highest level of safety. It called for the 130 inspector vacancies in the aviation safety and security branch to be filled immediately and 50 additional inspectors hired. The union was also clear it supported direct unannounced inspections for all carriers, whether SMS-certified or not.

In its 2014 *Brief on Aviation Safety*, UCTE reinforced its previously stated reservations by noting that inspectors have become SMS auditors and have ceased conducting inspections. The union warned that carriers were given weeks of advance notice prior to audits, Transport Canada was hiring SMS auditors with no technical experience and public safety was being put at risk in consequence. Only highly trained government inspectors with the power to enforce can ensure that statutory obligations are met, the brief argued, and the gap in salaries with pilot inspectors needed to be closed.

Commons Transport Committee report March 2015: items on aviation SMS

The Commons committee studying SMS was told that the department's oversight database did not distinguish between announced and unannounced inspections. UCTE testified Transport Canada had turned many inspectors into program auditors who check corporate paperwork, and there had been no unannounced inspections of aviation companies since before 2005.

Aviation inspectors' representatives expressed grave concerns about the implementation and oversight of SMS in aviation and recommended that Transport Canada return to traditional oversight methods. They noted that the SMS requirements in Canada do not set out an "acceptable

level of safety,” as recommended by the International Civil Aviation Organization (ICAO). They told the committee that airline employee safety reports identifying systemic risks lacked detail because the reports were not confidential.

Some employees, too, had experienced reprisals from their employers after filing a safety concern through the Civil Aviation Issues Reporting System (CAIRS) at Transport Canada. Witnesses recommended taking the CAIRS program outside Transport Canada to protect employees from reprisal or job loss.

Contrary testimony was received by the committee from departmental and union officials. Transport Canada representatives said staff conducted thousands of on-site inspections and continued to enforce regulations directed at specific safety issues, other than SMS. They told the committee unannounced inspections take place in situations where there is evidence showing them to be effective, and oversight on behalf of the European Aviation Safety Agency is unannounced in accordance with an agreement with Transport Canada.

Most of industry using SMS

Since 2010, the Transportation Safety Board has recommended that Transport Canada implement regulations requiring all operators in the air industry to have formal safety management processes in place and overseen by Transport Canada. According to the department the vast majority of the industry is implementing SMS as SMS requirements cover 90% of the fare-paying aviation passenger kilometres in Canada. The parts of the sector where there are still no SMS requirements are airplane and helicopter flight training units, small operators (including air taxi and commuter operators) and companies that maintain their aircraft, companies delegated by Transport Canada to certify aircraft, and aircraft manufacturers, heliports and water airports.

Notably, UCTE said the companies routinely received notice prior to an inspection—sometimes by as much as several weeks—“... *and they can make sure that they have the right things in the right place prior to the inspection.*” UCTE testified that Transport Canada’s oversight of SMS does not consistently meet ICAO requirements which require audits and inspections to be carried out annually at a minimum. This was refuted by Transport Canada officials who said overall oversight efforts fully complied with ICAO standards. But the UCTE assertion was backed by the Air Line Pilots Association of Canada, noting: “... *virtually the entire aviation inspectorate thinks SMS is better at hiding safety problems than solving them.*”

Labour also took issue with the way the department mixed SMS oversight and inspection functions. According to CUPE: “*SMS does not generally include non-managerial employees in the process of determining the level of risk, nor determining how hazards should be controlled.*”

Commons Transport Committee aviation safety hearings, 2017

“According to Mr. Moshansky, Transport Canada’s current approach is so inadequate that the federal government should launch an investigation under the *Inquiries Act*. He notes in his brief that ‘Transport Canada has now totally abandoned traditional hands-on regulatory oversight, in-flight inspections and audits across the aviation system (thereby eliminating expensive inspector personnel).’”

Aviation Safety in Canada,
Report of the Standing Committee on Transport, Infrastructure and
Communities, June 2017

Justice Virgil Moshansky led the public inquiry into the 1989 Dryden Air crash and was a key witness during the committee hearings of 2017 on aviation safety. His brief and testimony to the committee were searing indictments of Transport Canada’s failure to put in place effective SMS. He was categorical that Transport Canada’s failure to comply with International Civil Aviation Organization regulatory oversight requirements is rooted in the failure to adequately fund the aviation safety directorate.

After the Moshansky report of 1992, the aviation safety directorate did receive new resources. However, budget cuts were resumed after 2001, and SMS was implemented in the aviation sector in 2005. Justice Moshansky testified that a senior Transport Canada official had admitted to him that lack of funding was behind the promotion of SMS.

Transport Canada reduced its inspections of license holders from once a year to once every three years to once every five years at best, and the completion rate for planned SMS assessments in 2016-17 was just 50%. Transport Canada stopped doing full safety assessments of airports, unlike the US Federal Aviation Administration requirement for full annual inspections. Justice Moshansky laid the blame ultimately at the political level, saying that if senior managers are not given adequate funds by their political masters, they will look for places to cut budgets.

Though SMS is described by senior Transport Canada officials as an additional safety level, it is in fact serving as a substitute. He testified that many countries are adopting SMS, but no country in the world except Canada has implemented it without regulatory oversight as a requirement. Canada has effectively abandoned regulatory oversight. He recommended that Transport Canada inspectors be returned to their more traditional roles.

UCTE presentation

In its testimony before the above-mentioned aviation safety hearings,

the UCTE once again emphasized that safety was being compromised through policy change and budget cutbacks. The shift to a multimodal inspection system lowered the overall quality of inspections, and the number of inspectors had been reduced just as air traffic was growing. Furthermore, the union said that the existing SMS implementation was placing the importance of paperwork over that of actual audit and inspection.

The system in Canada was contrasted with that in the US where there is strong whistleblower protection and far less reliance on SMS for regulatory oversight. UCTE pressed for whistleblower protections in Canada so workers both within and outside of government could report incidents without fear of reprisal.

The union pointed to significant weaknesses in Transport Canada's operation of SMS including:

- advance notice of as much as 10 weeks of an upcoming assessment
- low inspector-to-staff ratios with inspectors representing only about half of the total staff complement of a directorate dedicated to safety and security
- recruitment of unqualified generalists for civil aviation inspection jobs that need highly qualified specialists
- offloading of airport safety to the private for-profit sector which prioritizes financial returns over safety
- slow action on Transportation Safety Board (TSB) recommendations
- cumbersome information system with poor searchability

UCTE also warned that the department appeared poised to hand over approval to the industry of the compliance manual detailing how industry must follow regulations—a manual that is in effect today.

In making its recommendations to the committee, UCTE emphasized that the audit function should be completely separate from direct inspection; safety accidents and incidents should be publicly available through a searchable database; there should be imposed time limits for implementing TSB recommendations, and inspectors should be a key component of all TSB follow-up; and ministerial delegations with oversight power should not be allowed except for select functions such as new-builds and retrofits. Where delegations exist, conflict of interest rules must be put in place and enforced.

Aviation Safety Report 2017
Commons Transport
Committee Summary of
Recommendations

Transport Canada Response

- Transport Canada:
 - adapt its proposed regulation for fatigue management to find ways to take into account the specific operating conditions of certain regions
 - mandate more on-site safety inspections as opposed to SMS audits
 - establish targets to ensure more on-site safety inspections instead of SMS audits, and use these audits as a vehicle for prioritizing on-site inspections
 - review whistleblower policies to ensure adequate protection for people who raise safety issues
 - ensure that SMS are accompanied by an effective, properly financed, adequately staffed system of regulatory oversight: monitoring, surveillance and enforcement supported by sufficient, appropriately trained staff
 - review all training processes and training materials for civil aviation inspectors to ensure they have the resources to perform their duties effectively
 - invite the International Civil Aviation Organization (ICAO) to conduct a comprehensive audit of Canada's civil aviation oversight system
- The department:
 - is committed to applying fatigue-related scientific principles to the management of flight crew fatigue. Its proposed regulations provide an alternate means of compliance allowing operators to address the issue generally while taking into account unique or regional considerations
 - will not reduce the 50:1 passenger to flight attendant ratio
 - is reviewing how to expand SMS to other sectors and will examine feasibility. This review will be completed in 2018
 - believes in the importance of a mixed system of inspections and SMS audits; and compliance spot checks
 - is taking the enforcement action necessary to address non-compliance; regarding certification, Transport Canada invests in updating the operational conditions of all commercial air carriers and the certification of new aircraft
 - uses results of all inspections to adjust the frequency

<ul style="list-style-type: none"> → undertake its own air safety review and report its findings to Parliament → in reviewing training practices, strike a balance between in-flight and simulator-based training and certification for pilots → establish an expedited process for responding to Transportation Safety Board air safety recommendations • The implementation of SMS become mandatory for all commercial operators. • The federal government produce an annual compliance report on Transport Canada's implementation of any measures identified in the audit conducted by the ICAO. • The federal government revise the 50:1 passenger to flight attendant ratio in consultation with stakeholders and experts on flight attendant ratios. 	<p>of inspection of specific enterprises; if an issue requires a company to implement a plan to correct the problem, it then monitors it through on-site inspections to ensure its implementation</p> <ul style="list-style-type: none"> → will conduct additional analysis and review of whistleblower policies → is reviewing its training processes and materials for civil aviation inspectors; Transport Canada is delivering new training courses to account for regulatory changes and emerging technologies in partnership with service providers → is making a greater effort to respond to Transportation Safety Board recommendations that are accepted in a timely fashion • The approved training organization learning model for pilots will set an appropriate balance between simulator and in-flight training. • The International Civil Aviation Organization (ICAO) will audit the oversight regime in 2020 and report annually on implementation of measures identified. Transport Canada is not contemplating its own aviation safety review.
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Boeing 737 Max 8

Documents made public at the Commons Transport Committee hearings in March, 2020, revealed that Transport Canada test pilots raised concerns about the 737 Max 8 as far back as 2016.

March 10, 2020, marked the one-year anniversary of the Ethiopian Airlines crash that claimed 157 lives, including those of 18 Canadians. Five months earlier, on October 29, 2018, the Lion Air crash in Indonesia killed 189 passengers and crew. Both crashes involved Boeing's 737 Max 8 aircraft. A preliminary report by a US congressional committee stated the Federal Administration Authority (FAA) had outsourced more regulatory functions to Boeing itself including granting Boeing employees the power to certify the plane for flying. The FAA not only failed to designate the Max 8's anti-stall software as a safety-critical system, it approved Boeing's demand to remove all references to the software's existence in the operating manual. FAA senior management, at Boeing's request, overruled the Authority's own expert technical assessment of the aircraft's vulnerability.

Transport Canada, meanwhile, had outsourced the bulk of its regulatory responsibilities to the FAA and, by extension, to Boeing itself.²⁷ Under the Transport Canada-FAA arrangement, the US regulator certified the plane first, and then Canada cleared the 737 Max 8 to fly based on material provided by the FAA, not through direct testing.

Following the two crashes, it was to be revealed that Boeing had not been recertified for its Max 8 in the US. Transport Canada, despite not getting answers from Boeing as to why, decided to approve the Max 8 because of delivery obligations to Canadian carriers.

To date, no criminal charges have been laid. The FAA and Boeing have begun testing for recertification of the Max 8. In September, 2020, the British Airline Pilots' Association told the FAA that the Max 8 still needs better fixes for its anti-stall software which had caused the crashes. Reportedly, the Canadian government is planning its own testing.²⁸

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TRANSPORTATION OF DANGEROUS GOODS (TDG)

The 1992 TDG Act and the TDG Regulations constitute the main legislation governing dangerous goods movements in all modes: aviation, marine, rail and road. The TDG Regulations compel companies to contact the Canadian Transport Emergency Centre (CANUTEC) in the event of a dangerous goods release. CANUTEC is responsible for helping first responders to accidents.

Domestic marine vessels carrying dangerous goods must comply with the *Transportation of Dangerous Goods (TDG) Act*, the *Canada Shipping Act* and their regulations. For all international shipments of packaged dangerous goods travelling to and from Canada, the legislation incorporates the International Maritime Organization's *International Maritime Dangerous Goods Code*, which deals with the transport of dangerous goods by sea.

Federal inspections are conducted aboard both domestic and foreign vessels in Canadian ports. Inspectors ensure that shippers comply with the means of containment, shipping documentation and classification prescribed by the TDG Regulations.

The *Safeguarding Canada's Seas and Skies (SCSS) Act* of December 2014 amended the *Marine Liability Act* to implement the International Convention on Liability and Compensation for damage in connection with the carriage of hazardous and noxious goods. The (SCSS) Act also added new types of violations and enforcement measures under the *Canada Shipping Act* to better manage the risk of accidental discharges of petroleum products in Canadian waters. The TDG Act does not apply to petroleum products transported in tankers. The safe conduct of tankers is governed by the *Canada Shipping Act* and the *Pilotage Act*.

Transport Canada's Tanker Safety Expert Panel recommended at the end of 2013 that a multi-jurisdictional risk-based response planning and exercise program be established. The Shipping Federation of Canada, testifying before the Commons committee studying TDG in 2015, said more needed to be done even though employees receive significant training in marine TDG transportation. The federation recommended, as a way to strengthen ship-source oil preparedness and response, the development of a comprehensive national planning and exercise framework that would involve all key stakeholders.

Although less than 1% of dangerous goods are transported by air, dangers associated with their transport have been highlighted by employees. In particular, airline unions have suggested that Transport Canada take steps beyond International Civil Aviation Organization requirement to address the safety risks of consolidating packages of lithium batteries.

Commissioner of Environment and Sustainable Development (CESD) in the Auditor General's office: findings

The commissioner found an overarching inconsistency in the oversight program affecting inspection planning, reporting and monitoring within and across regions.

A December 2011 report from the CESD in the Auditor General's office found numerous weaknesses in Transport Canada's ability to conduct thorough inspections.

According to the 2011 report, the department's Transportation of Dangerous Goods (TDG) Directorate did not know which companies handled dangerous goods, nor did it prioritize inspections based on risk. The CESD found that oversight was not risk-based, companies were not compliant with regulations and there was a lack of guidance for inspectors. Part of the issue was that the directorate's compliance measurement system was dependent on information that wasn't being collected, thereby compromising its ability to do risk assessments, target resources to areas of highest risk and meet its target of reviewing each region once every five years. Without the information, the directorate was also incapable of determining multimodal compliance rates.

Inspections were carried out inconsistently. First, inspectors didn't fully understand procedures for the follow-up inspections needed to ensure compliance. Secondly, the compliance manual had not been fully updated. A sample of inspections showed that almost three-quarters of companies found non-compliant were not followed up thoroughly, if at all, to ensure corrective action had been taken.

Furthermore, the TDG Directorate had not integrated general compliance and means-of-containment inspections and thus had no method of reconciling inspection priorities.

In a follow-up report released in October 2020, the Auditor General Environmental Commissioner found Transport Canada had still not resolved many problems highlighted in its 2011 report. Transport Canada's risk-based process to target inspections was based on incomplete and outdated information. One-in-ten dangerous goods facilities' certificates of operation registered with the department had expired. The report questioned Transport Canada's ability to enforce regulations.

2014 UCTE brief on the transportation of dangerous goods (TDG)

Coming out of the Lac-Mégantic tragedy, UCTE submitted a brief and provided testimony to the Commons committee reviewing TDG and SMS. The brief identified a mixed bag of responsibilities between the

TDG Directorate and the mode-specific directorates. While dangerous goods inspectors from rail and aviation safety had been brought into the TDG Directorate, those in marine remained outside. This was particularly concerning because the TDG Directorate was not truly inspection-based but concerned itself with containment issues and checking off corporate paperwork.

In its recommendation, UCTE emphasized the need to better define roles by refocusing the TDG Directorate on training and standards, TDG legislation, containment research, international coordination, SMS plans, and responsibilities and accountabilities. Inspection, oversight, compliance and enforcement would move back to the transportation mode directorates. For each mode, UCTE advocated the appointment of a lead inspector responsible for all regulatory compliance and an accountable executive who would serve as the Director General of Safety for that mode.

Transport Canada response to the Lac-Mégantic disaster

“Almost all of the 63 derailed tank cars were damaged, and many had large breaches. About six million litres of petroleum crude oil was quickly released. The fire began almost immediately, and the ensuing blaze and explosions left 47 people dead. Another 2,000 people were forced from their homes, and much of the downtown core was destroyed.”

Transportation Safety Board (TSB) investigation summary

The 2013 train crash in Lac-Mégantic’s town core forced a national reflection on the way dangerous goods were transported and secured in Canada. The Government of Canada—through Transport Canada and the minister—exercised legal authorities to issue multiple directions and orders which included, among others, the testing of crude oil imports, releasing information to municipal officials and regulating speed, tank car design and the use of hand brakes and other securement measures. Railway operating certificates were introduced, and administrative monetary penalties came into force.

The *Safe and Accountable Rail Act* of 2015 established a new liability and compensation regime for rail accidents involving dangerous goods. Transport Canada amended the Transportation of Dangerous Goods Regulations to require Emergency Response Assistance Plans for crude oil, gasoline, diesel, aviation fuel and ethanol shipments and a more robust tank car for flammable liquids. That same year, Canada and the US approved a strengthened tank car design (TC 117) for crude oil.

The following year new rules regarding key trains and key routes came into force. In July, Transport Minister Garneau moved up the elimination date for transporting crude in standard DOT-111 tank cars to November 1, 2016. He failed to mention that the CPC-1232 jacketed model—a “slightly improved” DOT-111—would still be allowed to carry crude oil until May 1, 2025. While the TSB had warned that the CPC-1232 phase-out was too long, an internal Transport Canada memorandum to the minister cautioned that accelerating the schedule was not feasible, considering economic realities and that any change “would require US regulatory support.”

2017 consultations

Once again, the multimodal system for inspections came under the microscope

Transport Canada held consultations on the transportation of dangerous goods (TDG) in 2017. The recommendations and conclusions reached as a result of those consultations were eerily similar to those that had been put to the Commons Transport Committee by UCTE in 2014. In particular, the consultations concluded training was outdated and insufficient to meet the growing range of duties and expectations of TDG inspectors—a direct result of the transition to a multimodal system of providing dangerous goods services. The transition to a multimodal inspection system wrongly assumed inspectors were proficient in all modes, and budget cuts negatively affected professional development, reducing or entirely eliminating training.

Other learnings from these consultations included:

- Inspection officials must be able to sanction companies that do not adhere to all of their TDG training requirements.
- Re-testing to ensure inspectors have an adequate level of competency should be mandatory.
- Unlike the United States, Canada does not have a dangerous goods registry. All transport organizations handling dangerous goods should be registered with Transport Canada in an official database and be required to maintain certification.
- There is little regard for inspectors’ personal health and safety. Formal occupational health and safety training is minimal, and inspectors are forced to learn on the job.

Transportation Safety Board (TSB) Watchlist: dangerous goods, 2014-20

New tank cars appear to be equally vulnerable to product releases and explosions as older cars when they derail at speeds more than 35mph (55km/h), according to a March 2020 TSB safety advisory.

The TSB first put the transportation of flammable liquids on its Watchlist in 2014, shortly after the release of its Lac-Mégantic investigation report. The report stated that railway operating practices combined with the vulnerability of the tank cars being used were not effectively mitigating the risk to people, property and the environment when derailments occurred. It called for strategic route planning, urging the railways to carefully choose the routes on which crude oil and other dangerous goods were being carried and to perform risk assessments that would ensure effectiveness of risk control measures. It had warned for years against using vulnerable Class III tank cars.

In its 2016 Watchlist, the TSB again focused on the increased use of rail to move crude oil across North America. It repeated its concerns over tank cars and inadequate operating practices and stressed the need for strategic route planning and risk assessments.

Rail transportation of flammable liquids was removed from the 2018 Watchlist because there had been progress on risk assessment, and stronger tank cars were in use. Subsequent to the report, however, there were several derailments and major spills of crude oil carried in the newer TC-117 tank cars, most recently in December 2019 and February 2020 near Guernsey, Saskatchewan, and Emo in Ontario March 2020. The TSB said these new cars appeared to be as vulnerable as the older ones to product releases and explosions when derailling at speeds greater than 35mph (55km/h).

Railway Safety Act (RSA) Review 2017-18 report: items pertaining to transportation of dangerous goods

Simply put, concerns about dangerous goods transportation over rail lines through urban zones have not been taken seriously, despite a history that includes loss of life, homes and businesses.

While the RSA Review mandate did not include a direct examination of the transportation of dangerous goods (TDG), as this was regulated under the *Transportation of Dangerous Goods Act*, the RSA Review Commission acknowledged that concern about dangerous goods travelling through

or near communities was a recurring theme in consultations held with provinces/territories, Indigenous groups, municipalities, community groups and individual citizens across the country.

The commission also received submissions and comments during roundtable sessions requesting that real-time information on dangerous good movements be made available to emergency responders. The report noted that the information is available via the AskRail Application, developed as a collaborative effort by Class 1 railways in Canada and the US. AskRail can be downloaded to mobile devices and used by qualified first responders with authorization from the railway companies. The report stated that initiatives like the AskRail app are a step in the right direction in terms of getting information to those who need it. It did not, however, address the issue of route selection and alternatives to transporting dangerous substances through densely populated areas, saying that was outside its mandate—this despite much concern among Canadians dating at least as far back as the 1979 derailment on the CP line through Mississauga.

The release of deadly chlorine gas forced the evacuation of 240,000 people, an effort called the Mississauga miracle. The subsequent Grange report recommended that the rail line be relocated out of midtown. This is the same line through which the fateful oil train heading for Lac-Mégantic travelled almost 25 years later. The 2016 review of the *Canada Transportation Act* also recommended the relocation of freight rail infrastructure outside densely populated areas.

Pleas from impacted municipalities, while not entirely ignored, have been given meagre validation. In 2015, Toronto city council wrote to the transport minister asking that trains carrying dangerous goods be rerouted around the city. Efforts to obtain company route risk assessments and emergency response plans were denied on the grounds of commercial confidentiality. Lac-Mégantic received a commitment from the federal and provincial governments to build a rail bypass around the town, currently scheduled to be completed by 2023, a decade after the disaster.



RAIL

“... there is an inherent conflict of interest built into unbridled accountability to SMS as the primary means to ensure the safety of the travelling public... Safety can sometimes get in the way of economy and self-interest. It is difficult and sometimes impossible for private, profit-maximizing corporations to effectively make these choices. This is why SMS must be an added layer and not a substitute.”

UCTE brief, 2014, Commons Transport Committee

Since the introduction of the *Railway Safety Act* (RSA) in 1985, there has been a significant and worrisome relaxation of prescriptive regulation and a trend towards performance-based regulation. The Canadian Rail Operating Rules (CROR), constituting delegated power from the minister, evolved from the Act and came into force in 1989. Industry restructuring occurred in the 1990s with CN privatized, ownership restrictions relaxed and permission given to sell “unprofitable lines.” Furthermore, NAFTA led to the North Americanization of CN and CP as Class I railroads and the emergence of several dozen mainly US-owned short lines in Canada.

SMS was introduced in 2001, a move described by Transport Canada as a shift from a “traditional” inspections approach to one based on assessments. The department was to de-emphasize inspections of federal railways’ compliance with regulations, rules and engineering standards, such as the CROR under the RSA, to rely more on a system of assessments whereby the department would check whether railways were implementing effective SMS to manage safety risks in day-to-day operations.

The implementation of SMS spelled a retreat from direct oversight, granting companies more discretion in balancing costs and safety. This coincided with the continued shrinking of Transport Canada resources, leaving it ill-equipped to oversee SMS.

Six years after SMS began, the RSA Review Panel cautioned that SMS required a major change in thinking by both the regulator and the railways. Its report found: “*Transport Canada. . . was not provided with sufficient human and financial resources, and the appropriate skill sets . . . to effectively manage and oversee Safety Management Systems.*” Overall, the panel concluded: “*Transport Canada is inadequately resourced to carry out its many responsibilities in the area of railway safety.*” The 2007 RSA panel further recommended that: “*Transport Canada, Rail Safety Directorate should be organized so as to better*

integrate Safety Management Systems as the key focus of its oversight activities.”

In its 2013 rail safety audit, the Auditor General identified significant weaknesses in Transport Canada’s oversight and enforcement of SMS. It found that approximately 40% of the rail inspectors had yet to receive the training required to perform audits and lacked data to properly target higher risk operations as well as the most significant safety risks. The report stated the department had not assessed the resources it needed to complete its functions and would require a substantial increase in capacity to fully implement the SMS regime. The Auditor General also recommended that Transport Canada better define the SMS audit methodology and undertake analysis to gain a better understanding of its resource requirements to provide adequate rail safety oversight. A follow-up audit is scheduled for release in 2021.

UCTE 2014 brief

Union tells of secret exemptions and ways safety is being eroded.

UCTE presented to the Commons Transport Committee studying the Canadian transportation safety regime in 2014. The workers told the committee they were concerned economic self-interest was eroding safety. Rail companies were secretly being given exemptions without any understandable rationale being provided for such exemptions.

In respect to rail safety specifically, the worker representatives said direct inspections needed to be prioritized over SMS audits and be conducted by highly trained inspectors with the power to revoke licenses and operating certificates as well as to impose fines. Direct and unannounced inspections were the best way to ensure compliance, the union said.

UCTE also recommended mandatory rail incident reporting similar to that of the aviation sector and the recording of such incident reports on a publicly available searchable database.

Transport Committee 2016 study on rail safety

Parliamentary committee calls for more on-site inspections, resources and training.

The House of Commons Standing Committee on Transport undertook a study of rail safety in 2016. Though recent amendments to the *Railway Safety Act*, and subsequent new regulations, were seen to be making inroads in rail safety, the committee still put forward numerous recommendations for improvement, namely that Transport Canada:

- immediately increase the number of on-site and visual inspections for compliance with rail safety regulations and rules, prioritizing companies with a record of poor performance in developing and implementing effective SMS or ones that have demonstrated repeated marginal or non-compliance with federal rail safety regulations
- assign increased resources and training for field inspections on rail safety
- mandate the use of locomotive voice and video recorders by railway companies, and put in place effective rules to ensure recordings are used exclusively by the appropriate government authorities during Transportation Safety Board (TSB) accident investigations or in subsequent criminal investigations to which they directly relate
- establish and adopt an expedited process for responding to Transportation Safety Board (TSB) recommendations
- together with the labour department, Occupational Health and Safety, take immediate action through a working group to improve fatigue management by January 2018

There were further recommendations to Transport Canada, some to which the department provided a response:

Transport Committee Recommendations 2016	Government Response
Transport Canada re-examine the rules and technology on maximum wear of rails to ensure that visual assessments of the rails' conditions and improved technologies are included in the inspection criteria	Transport Canada is working with partners in the US to define relevant standards. The department has adjusted its oversight activities to focus resources on track oversight.
Transport Canada put in place an enhanced qualification and training program for the rail industry for engineers and other workers directly involved in rail safety	Transport Canada is reviewing existing training and qualification requirements for railway employees.
Transport Canada increase annual number of on-site inspections for compliance with rail safety	Transport Canada agrees.

Transport Canada release enhanced train control working group report	Transport Canada agrees.
Transport Canada review whistleblower protections to determine whether inclusion in SMS is the appropriate framework	It will be part of the upcoming <i>Railway Safety Act</i> review.

***Railway Safety Act* Review report: 2018**

The statutory review identified steps forward but questioned if there was enough staff expertise to ensure a robust safety culture.

The *Railway Safety Act* (RSA) review was a statutory requirement to review the operation of the Act by May 2019. As committed by the minister of the day, Marc Garneau, the timing of the review was advanced by one year. A three-person panel was appointed, and following a year of research, consultations and analyses, the report *Enhancing Rail Safety in Canada: Working Together for Safer Communities* was released.

The report stated that the SMS 2015 regulatory amendments were a step forward, but there was room for improvement on implementation and industry safety culture. The panel questioned whether Transport Canada had enough staff expertise to ensure a robust safety culture. It called for greater transparency and consultation in the rule-making process, including giving communities greater say over trains travelling through their municipalities.

Despite finding these weaknesses, the report in general was favourable to the work undertaken by Transport Canada and the railways. It concluded that the many changes since the 2007 review resulted in a rail safety regime that “... is now very robust in meeting its ongoing compliance monitoring and enforcement functions.”

Curiously, the report stated a further fundamental rebalancing of the regulator-industry power relationship is not required and that Transport Canada did not need more resources, though what they did have should be managed more efficiently. It did not, like the 2007 RSA Review report, criticize the government for its failure to provide necessary resources for oversight, skill building and research, problems that still exist. It agreed with railways that operating rules are overly prescriptive and inflexible. The report bended to industry pressure to relax administrative monetary

penalties as well as to pressure for greater flexibility in the tribunal appeal process. Included were recommendations to:

- link compliance inspections to SMS audits, and inspectors with auditors.
- improve safety culture via increased research and a more proactive role for Transport Canada in company adoption of formal safety culture policies; develop a safety culture policy statement; and provide funding to support safety culture assessments by short line railways and academic institutions
- have Transport Canada take a leadership role on fatigue management
- have Transport Canada strengthen its capacity in the areas of technology evaluation and data analytics in rail and adoption of rail safety technology
- conduct further study of electronic train control and develop an implementation plan; and conduct further study of electro-pneumatic brake (ECP) systems. (Safety experts have advocated their implementation for decades. The 2007 RSA Review report had recommended the adoption of ECP brakes.)

Government response since Lac-Mégantic

Since the Lac-Mégantic train derailment and the Auditor General's 2013 rail safety audit, Transport Canada has been under significant public and political pressure to improve the rail safety regime in Canada. In its various reports and testimonies, the department states that it has made continuous progress throughout the rest of the decade.

In its testimony for the 2016 Update on Rail Safety by the Commons Transport Committee, departmental officials outlined several SMS and related safety initiatives. The 2015 amendments to the *Railway Safety Act* changed SMS requirements so railway companies would have processes in place for hazard identification, incident reporting and performance measurement, and mechanisms for continuous improvement in safety performance. Amendments required companies to take remedial actions following risk assessments, continuously monitor and assess the level of safety achieved, appoint an executive legally responsible for safety, increase the involvement of employees and their bargaining agents in the operation of their SMS and include the principles of fatigue science in scheduling employees' working hours.

Administrative Monetary Penalties Regulations providing for fines of up to \$125,000 per violation were also implemented as were Railway Operating Certificate Regulations requiring companies to meet baseline safety standards and authorizing the minister to suspend or cancel a

certificate for contraventions to the Act. Inspectors were given more authority to mitigate threatening situations, and the minister could order companies to upgrade their SMS.

Whistleblower provisions in the 2015 regulations require railway companies to establish a SMS policy enabling employees to report safety concerns without fear of reprisals. Likewise Transport Canada advised that it had increased the number of rail safety inspectors within the department since March 2015 by approximately 30% to 137 inspectors.

In responding to the RSA Review of 2018, the department pointed out it has put in place additional resources to further implement new SMS requirements and increase its auditing capacity. It monitors industry SMS regulatory compliance by doing comprehensive audits on a three-to-five-year cycle, more frequently if needed, and its selection of railways to audit is informed by risk. Joint SMS workshops are being held annually with industry. With respect to safety culture, Transport Canada is working to produce a safety culture policy statement along with stakeholders and will review transport safety within other highly hazardous sectors, such as nuclear.

The department also noted it had established an innovation centre in January 2018 to create stronger capacity to anticipate technological change, share expertise in technology and research, identify innovative regulatory solutions and influence technology development globally. It said it would update the Guidelines on Exemption Requests to formally include data-sharing provisions by May 2019. It is working on a Canadian approach to enhanced train control, which would fulfill a long-standing recommendation of the Transportation Safety Board.

In more recent developments, Transport Canada has also updated its Safety Management Action Plan to include full implementation of the department's rail safety integrated data collection system. All rail safety inspectors have been trained to conduct SMS audits. Furthermore, Transport Canada published final Locomotive Voice and Video Recorder Regulations in September 2020, which outlined the technical requirements for rail companies to install these devices by September 2, 2022.

5



MARINE

Marine SMS has been on the Transportation Safety Board (TSB) Watchlist since 2010, as has its recommendation that SMS be expanded to the commercial domestic fleet. Finally, in July 2020, Transport Canada released proposed regulations to adopt the recommendation.

SMS requirements for commercial marine shipping have been in place longer than for other sectors, thanks in large part to international agreements.

The International Maritime Organization (IMO) introduced the *International Safety Management Code* (ISM Code) into the *International Convention for the Safety of Life at Sea* (SOLAS) in 1998. Marine requirements are defined in the Annex to IMO Assembly Resolution A.741(18) – 1993 (The ISM Code.) As a signatory to SOLAS, Canada implemented the ISM Code in 1998 by incorporating it into SMS regulations for international vessels of over 500 gross tonnage, such vessels now covered by the Canada Shipping Act, 2001.

The SMS regulations for Canada's commercial vessels travelling international waters are supplementary to the existing statutory requirements for certification and inspection of marine vessels. The ISM Code requires international commercial vessel owners/operators to assign responsibilities for safety, establish formal safety procedures, document planned maintenance, identify potential risks and perform internal audits and management reviews. Currently, there are no SMS requirements in Canada for the domestic owners/operators of smaller commercial vessels that remain in domestic waters, but according to Transport Canada, many of these operators have voluntarily adopted SMS.

Transport Canada proposed to amend the SMS regulations so that they apply to larger Canadian vessels that remain in domestic waters—those that carry more than 50 passengers and/or are larger than 500 gross tonnage. The operators of these passenger and cargo vessels would be required to have their SMS audited and certified. For vessels larger than 24 metres in length but less than 500 gross tonnage, the department proposed to mandate SMS but no audit or certification requirements. Should these amendments be approved, tugs, barges and fishing boats under 500 tons could prove to be the weakest links in marine safety in Canada.

According to a representative of the Association of Canadian Port Authorities, the *Canadian Shipping Act* requires the port authorities to put in place a framework to ensure safety. In order to meet this requirement, all Canadian port authorities have established their own SMS and generally don't believe additional regulations are required.

UCTE 2014 Brief

Inspection has been delegated to international classification societies, leaving too much room for abuse.

In its brief to the Commons Transport Committee in 2014, labour representatives noted SMS compliance with international codes and enforcement was being delegated mainly to classification societies, not Transport Canada inspectors. UCTE argued that marine SMS audits and inspections should be administratively separate, as needed to also be the case with all transport modes.

The marine sector had a long history of regulatory delegation to the international classification societies, a practice UCTE said it could no longer support. Inspection delegations to international classification societies left too much room for abuse and conflicts of interest between owners and societies.

The union argued that marine safety has largely been ignored by Transport Canada, and safety had therefore defaulted to self-regulation. Marine safety inspections needed to better meet international standards, and a comprehensive marine safety and environmental protection policy was required to define levels of authority and provide direction on accident reporting and emergency measures and response, and to enable external and internal audits as well as management reviews. The main oversight functions for Transport Canada marine safety inspectors needed to be unannounced inspections, powers to revoke licenses and the ability to impose monetary penalties. And these functions, UCTE said, should apply to all Canadian vessels, even those with inspection programs, such programs lacking as they were delegated to classification societies.

Commons Committee Report March 2015

The Commons Transport Committee echoed the UCTE's position presented the previous year—that inspectors needed to be able to suspend certificates and impose administrative monetary penalties, in addition to taking other enforcement actions, when operators violated statutory requirements.

As part of its review of the Canadian transportation safety regime, the Commons Transport Committee identified a major weakness in the voluntary SMS regime adopted by smaller vessel operators that remain in domestic waters: Classification societies would not audit older vessels

or those not built to certain standards, leaving SMS oversight of these vessels to Transport Canada inspectors who were not available to do the job.

As noted in the committee report, the Canadian Passenger Vessel Association testified that there weren't any marine safety inspectors in the department "*capable of fulfilling the audit of an SMS aboard a Canadian-flagged vessel.*"

Transport Canada's budget for marine safety had declined over the previous five years, and officials from the department told the committee some of the reduction was the result of increased operational efficiency. For example, some of the marine budget was transferred to the Transportation of Dangerous Goods Directorate.

The committee said Transport Canada inspectors should have the ability to examine certificates of compliance issued by flag states. Ships' officers must be obliged to produce corrective action reports and be dealt with in a timely manner, and port control should be required to review the CMR—a file serving as a contract for transporting goods internationally—each time there is an onboard compliance check. The committee supported the government's efforts to move forward with *Marine Liability Act* amendments that would remove the per incident liability limit on the Ship-source Oil Pollution Fund, thereby freeing up money to adequately address damages that can occur from a serious, single incident.

Spotlight on Safety: why accidents are often not accidental

"The end result is that companies are regulated by private organizations that they themselves employ and have a choice in selecting."

Spotlight on Safety, 2019

This report was published in 2019 under the auspices of the International Organization of Masters, Mates and Pilots, and Dalhousie University. Its authors include John Dalziel, former Transport Canada inspector and currently adjunct professor at Dalhousie²⁹ Its main conclusions are as follows:

- The International Maritime Organization (IMO) has established minimum safety, pollution and emission standards for ships in the international trade. The IMO, the International Labour Organization and government and private regulatory bodies provide a regulatory regime which, if followed, substantially reduces the risk and severity of maritime casualties. However, commercial pressures adversely affect the regulatory regime.
- Flags of convenience registries, which allow owners to use another

country's flag on their ships, compete with each other to offer the least burdensome tax and regulatory environment to owners/operators. Furthermore, companies employ classification societies to prepare their SMS and then conduct audits by reviewing SMS documentation and performance.

The *General Maritime Law* governing international shipping has insulated senior managers from the consequences of regulatory non-compliance. Reporting is discouraged to protect management from personal liability. Marine inspectors are at times pressured by management to look the other way.

- One of the principal purposes of SMS is to provide a link between onboard safety management and a designated person ashore who has access to the highest level of management in the company. The designated person is responsible for monitoring the safety of the ship and ensuring that adequate resources and shore-based support are provided.
- The alternative compliance program is one for which classification societies perform inspection. They are paid by ship owners to authorize certificates needed for marine operations—a major conflict of interest. The societies are self-financing and require ship owner revenues to operate and not lose clients. Ship crews which are well placed to ensure regulatory compliance are at times pressured to keep quiet so the ship can continue moving.
- There should be a legal framework to protect crew members and enforcement of the Maritime Labour Convention. There should also be criminal accountability legislation for executives and boards of directors as well as for regulatory agencies.

In July 2020, Transport Canada released proposed SMS regulations for commercial vessels in the domestic marine industry, thereby removing the voluntary nature of the industry's SMS regime. The proposal is supported by UCTE.

Since at least 2014, labour has called for a Transport Canada inspection and enforcement role throughout the sector, including within territorial waters. Specifically, it has pressed for unplanned and unannounced inspections by Transport Canada marine inspectors with powers to revoke licenses and impose monetary penalties, a regime, it says, that should be applied to all vessels, even the large ones in the domestic marine fleet that are already 'inspected' but by classification societies. UCTE also advocates for effective whistleblower protections to be included in the amended SMS regulations.



CONCLUSION

Changing the existing paradigm and rebalancing the power relationship between the transport regulator and the regulated industry are essential components to breaking a cycle that blocks safety-enhancing measures.

Canada has a relatively safe transportation system. However, as described in this report, risks are present, and in some cases, they leave the window open for catastrophic failures. Much can be done to reduce these risks.

The number of air accidents has been falling over last decade. Nevertheless, 2019 saw a 12% increase from 2018. There were 33 fatal air accidents resulting in 70 deaths. The trend of marine accidents and fatalities has also been downward over the last 10 years.

Rail accidents were up 26% from 2018. There were 72 fatalities, about the same as the previous 10-year average. Most troubling, there were 168 rail accidents involving dangerous goods, an increase of 27% over the previous five-year average.

There is general agreement that SMS— as an additional safety layer—is important to the enhancement of transportation safety across all modes. However, the experience of the last two decades has demonstrated that problems occur when these systems aren't properly conceived, structured or implemented. Increased safety risks result, and in rare cases SMS were themselves contributing factors to major accidents. It is worth recalling James Reason's insight regarding SMS oversight. The key to a relatively successful SMS is a continuous concern with failure. *"Not forgetting to be afraid is the sign of an ideal safety culture."*

One of the most striking observations regarding the history of SMS, since first implemented in Canada two decades ago, is the discrepancy between the recommendations by multiple investigations and reports calling for fundamental improvements in SMS—the Transportation Safety Board (TSB), parliamentary committees, legislative reviews, Auditor General audits, independent analyses—and Transport Canada's incremental progress in making improvements.

Second are the mostly divergent explanations—between, on one hand, senior Transport Canada officials, politicians and senior industry representatives, and, on the other hand, union representatives and independent expert witnesses— about the state of SMS and what needs to be done to fix it. According to the former group, the system is basically sound, working well and continuing to improve. The latter group, while agreeing that there have been some improvements, concludes the system is in need of fundamental change.

Third, the same UCTE recommendations have been put forward repeatedly, yet not generally acted upon. In some cases, they have been

implemented, but that is the exception rather than the rule. Transport Canada's responses are often vague, contradictory and are more about future plans than actual actions. It is prone to explaining away lack of action on parliamentary committee recommendations, TSB and Auditor General recommendations, all which often reinforce UCTE positions.

Auditor General reports going back to 2008 have concluded SMS contains serious flaws. SMS has been on the TSB's Watchlist since it was first created in 2010 as "*among those issues posing the greatest risk to Canada's transportation system.*"

That SMS can be effective as an **additional** layer of safety is not in dispute. When it is a *substitute* for conventional oversight, it increases risk to public safety. This report demonstrates that since the inception of SMS, corporations in all modes have, for the most part, failed to implement positive safety cultures, proper risk assessments, science-based fatigue management practices and strong whistleblower protections. And Transport Canada has also failed to ensure these essential components of SMS have been properly installed.

This is largely the result of a policy decision-making process that reflects a long-standing neoliberal mindset and is driven by formidable corporate power. Austerity has reduced resources for evaluation, oversight and enforcement, leading to increased pressure to offload responsibility in favour of company self-regulation or non-regulatory options. Corporate power—wielded through intertwined policy, statutory and regulatory instruments—has dominated public policy, legislation and regulations over the last four decades. Governments have largely acquiesced to corporate priorities thereby compromising the public interest. Their ability to deny, delay, suspend and block measures to enhance safety needs to be remedied.

Changing the existing paradigm and rebalancing the power relationship between the transport regulator and the regulated industry—from a collaborative, deferential partnership relationship to one of necessary tension—are essential to breaking the cycle described above.



RECOMMENDATIONS

a. Specific SMS changes

1. First and foremost, Transport Canada must ensure that SMS are part and parcel of an effective, adequately financed, comprehensive system of regulatory oversight: inspection, surveillance and enforcement supported by sufficient, appropriately trained staff. Otherwise, SMS should be suspended and replaced by conventional oversight alone until this change occurs.
2. SMS auditors should be separated from the inspectors within each transportation mode directorate. There should be one responsible executive by mode, and this should be the director general of that mode. Modal directors general should sit on Transport Canada's senior management team, and the regional directors general should not be in a position to overrule their modal counterparts.
3. Hiring practices should prioritize inspectors with technical expertise instead of generalists, accompanied by strict conflict of interest provisions. There should be continuous learning and training for all inspectors and their supporting staff. Inspector-to-overall staff ratios should be increased.
4. SMS should be expanded to a broader range of aviation and marine companies. While SMS is only required by regulation to be implemented at 5% of the aviation companies regulated by Transport Canada, the department conducts its regulatory oversight as if all companies had adopted SMS. Many commercial marine vessels and the companies that operate them are not required to have an SMS, and SMS should be mandatory for all commercial marine operators.
5. There have been virtually no unannounced inspections of aviation companies. Enforcement action almost never takes place. Transport Canada's oversight of aviation SMS does not consistently meet International Civil Aviation Organization (ICAO) requirements. Inspections and enforcement must be the primary oversight tool with SMS an additional layer.
6. Ministerial inspection delegations to the international classification societies in the marine sector should be ended. There is too much room for abuse and conflicts of interest between owners and classification societies. This should also apply to industry delegations in the aviation sector. Delegated licensing and safety oversight to the industry associations violates the ICAO best practices framework.
7. "Highest level of safety" benchmarking requirements should be written into transport safety legislation, regulation, guidelines and policies.
8. The ratio of passengers to flight attendants should be reduced from 50:1 to 40:1, which is the international standard.

9. Whistleblower protections across all modes should be enshrined in laws as in the US, and there should be an independent office for this purpose. A robust whistleblower protection program will ensure that both private and public sector employees who come forward with safety concerns will not be harassed and threatened.
10. Administrative monetary penalties (AMPs) are important in principle, but their effectiveness as an enforcement tool has not yet been established and needs to be evaluated. Violations of SMS regulations should also be subject to AMPs.
11. Railways have made virtually zero progress in implementing alternative routes for the transportation of dangerous goods around heavily populated areas as recommended by the Transport Safety Board (TSB). Transport Canada needs to be more forceful in mandating company progress—for example, via interchange agreements—on rerouting to reduce the risk of major accidents.
12. Transport Canada should include in its proposed 2021 Marine SMS regulations an external inspection provision for Tier 4 vessels and a mandate for regular unannounced inspections by Transport Canada inspectors for all Tier 4 vessels operating in Canada. The new regulations should include effective whistleblowing provisions, which are essential to ensuring a positive safety culture—a stated objective of the proposed SMS regulations.

b. Related safety changes

1. Transport Canada’s research and analytical resources have been hollowed out, making the department dependent on information provided by industry and thus vulnerable to regulatory capture. The department should be provided with sufficient resources to independently initiate regulatory safety proposals and evaluate the safety implications of industry regulatory proposals.
2. There should be an independent review of the inner workings of Transport Canada. The outcomes should include:
 - ensuring a positive safety culture
 - establishing greater clarity with respect to lines of accountability
 - supporting openness and transparency
 - replacing silos with good communications across functions
 - encouraging leadership from the top
 - improved delegation of responsibilities to department personnel
3. Transport Canada should implement measures to address the flow of industry personnel and the issues this raises particularly in the rail and

transportation of dangerous goods (TDG) directorates. Such measures should include, minimally: training for those coming from industry on their duties as guardians of the public interest; an effective conflict of interest system and other ethical rules; a cooling off period for former employees going to industry, similar to rules in place for lobbying; and comparable salaries and career opportunities to private sector counterparts as well as other incentives to discourage regulators from moving to industry.

4. The TSB should be given more power in its relationship with Transport Canada. Its recommendations should not be allowed to go without action by the department indefinitely. There should be time limits, and recommendations should be mandatory, with penalties for noncompliance. Furthermore, there should be a clear separation of department staff from Board members during ongoing investigations.
5. Transport Canada should become more transparent and accountable to the public. This includes providing municipalities and other public interest groups with company SMS documents, risk assessments and real time information about their dangerous goods cargo. Representation on the joint industry-government bodies—the Canadian Aviation Regulation Advisory Council and the Canadian Marine Advisory Council—should be broadened to include concerned citizens' groups and municipal representatives.
6. Citizens' groups should be provided financial assistance to enable their interventions with respect to proposed regulations and other relevant safety matters.
7. The TSB should make publicly available a searchable, online database of accident and incident reports. Organizations that handle or transport dangerous goods should be registered with Transport Canada in a publicly accessible official database and be required to maintain certification. To this end, Transport Canada must complete the work it has started to establish a TDG Client Identification Database of organizations that handle, offer for transport or transport dangerous goods in Canada—despite the pushback from industry on this initiative.
8. Before the Boeing Max 8 or other new aircraft models are approved, they should be independently scrutinized by Transport Canada.
9. Changes to rail operating rules are still an industry-driven, closed-door process. They need to be subject to careful scrutiny within Transport Canada, by unions and by outside experts.
10. Since 2015, there have been seven major derailments of trains carrying dangerous goods. All occurred because of broken rails or other track infrastructure problems. The TSB March 2020 advisory noted: "In

key train and key route rules there were no provisions to address the need for enhanced track standards for key routes despite the huge increases in DG traffic volumes.” The track safety standards for key routes need to be updated.

11. Long recommended remote-control, satellite-based systems for monitoring and controlling train movements (i.e., electronic train control) and electro-pneumatic braking systems are vital safety measures which should be implemented without further procrastination.

c. Legislative changes

1. Legislation should be enacted to assure the independence of safety regulatory agencies from undue political influence. The TDG, aviation and rail directorates should be moved outside the department and report directly to Parliament. Consideration should be given to separating the TSB and the Canadian Transportation Agency from regulators, including Transport Canada.
2. Privy Council guidelines for ministerial accountability, weakened in 2011, should be restored as follows: “*Ministers are individually responsible to Parliament and the Prime Minister for their own actions and those of their department, including the actions of all officials under their management and direction, whether or not the ministers had prior knowledge.*” Senior officials need to be held to a higher standard of accountability, including statutory liability, for decisions which jeopardize public safety.
3. Corporate statutory liability should also be extended to ensure that company executives, directors and owners are held accountable for decisions that endanger public health, safety, the environment and entire communities. The expansion of legal liability for offenses committed by a corporation can be effective in strengthening and, in some cases, replacing a SMS regime.
4. The penalties under the *Railway Safety Act* are still considerably lower than other federal statutes such as the *Environmental Protection Act*. They should be increased as should those under the *Transportation of Dangerous Goods Act*. Government should finally put an end to the historical artifact of conferring extraordinary policing powers to CN and CP railways.
5. Government should make major changes to its overall regulatory policy document, the Cabinet Directive on Regulatory Policy, and eliminate the *Red Tape Reduction Act* and one-for-one rule, both which have contributed to a mentality supporting financial savings over safety. Government must prioritize the precautionary principle over competitiveness considerations when taking decisions about

health, safety and environment. The federal government has indicated it will review these policies in 2020-21.

6. Access to information laws should be strengthened to require lobbyists to make public more information about their activities regarding SMS, for example on fatigue management and whistleblower protections, fulfilling the government's 2015 election promise for increased accessibility to information.
7. The NAFTA Regulatory Cooperation Council working groups, charged with harmonizing regulations across North America, should be accountable to Parliament and to public scrutiny by labour and public interest groups, to ensure they are not forums for behind-the-scenes deregulation.

APPENDIX: ABBREVIATIONS

Administrative Monetary Penalties: AMP
Cabinet Directive on Regulatory Management: CDRM
Cabinet Directive on Regulatory Policy: CDRP
Canadian Aviation Regulations: CAR
Canadian Transport Emergency Centre: CANUTEC
Canadian Aviation Regulation Advisory Council: CARAC
Canadian Marine Advisory Council: CMAC
Canadian National (railway): CN
Canadian Pacific (railway): CP
Canadian Rail Operating Rules: CROR
Civil Aviation Issues Report System: CAIRS
Commissioner of Environment and Sustainable Development: CESD
Department of Transportation (US): DOT
Electronic Train Control: ETC
Electro-pneumatic brakes: ECP
Emergency Response Assistance Plan: ERAP
Federal Aviation Administration (US): FAA
International Civil Aviation Organization: ICAO
International Convention for the Safety of Life at Sea: SOLAS
International Maritime Organization: IMO
International Maritime Dangerous Goods Code: IMDG
International Safety Management Code: ISM
Privy Council Office: PCO
Railway Safety Act: RSA
Safety Management Systems: SMS
Safeguarding Canada' Seas and Skies: SCSS
Transportation of Dangerous Goods: TDG
Transportation Safety Board: TSB

APPENDIX: REFERENCES

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