Wildland Fires Resulting From Railway Operations –
A Public Safety Threat

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Advisory Panel
Railway Safety Act Review

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The Canadian Interagency Forest Fire Centre (CIFFC) is a non-profit corporation that represents a partnership among the provincial, territorial and federal government agencies responsible for forest fire management in Canada.

The Canadian Council of Forest Ministers established CIFFC to promote and improve fire management on a national level. CIFFC operates under a Board of Corporate Trustees made up of Deputy Ministers responsible for forestry representing each of the provinces, territories and federal government. The Board of Directors, comprising fire management directors in each of these agencies, meets regularly to provide direction to the operation of the centre, and also to direct a number of Canada-wide working groups and task teams that actively share information, and develop, refine, standardize forest management services within member agencies to improve forest fire management in Canada. The Task Team that created this submission is one of these task teams and included representatives of all provinces that have active railways.

CIFFC is also an operational agency that gathers, analyses, and disseminates fire management information to facilitate, under agreement, cost effective sharing of forest fire fighting resources across Canada. Equipment, personnel and aircraft in Canada are shared on a formal basis under the Canadian Interagency Mutual Aid Resources Sharing (MARS) Agreement.
Introduction

Forest fires, including those that are caused by railway operations, are a serious threat to public safety, the environment and sustainable natural resources. Across Canada, forest fire management agencies work to prevent and respond to fires to minimize those impacts. Regulatory frameworks are in place to ensure the incentives and penalties necessary to prevent fires and to minimize the impact of fires.

More than 140 fires are associated annually with railways in wildland areas managed by CIFFC member agencies. (Other fires occur within municipal areas, but are not all recorded by CIFFC agencies). While each of these fires starts out small, and many are suppressed, a few escape control efforts to cause significant damages. There are serious public safety risks every summer in Canada associated with fires resulting from railway operations. These occurrences demonstrate serious deficiencies both in the regulatory framework and administration of railway safety by Transport Canada, the Transportation Safety Board, and the railway companies. The objectives of this submission to the RSA review committee are to make the Minister of Transport aware of the serious and frequently occurring public safety issues associated with forest fires that result from railway operations in Canada; and to offer the support of CIFFC member agencies in finding solutions that benefit Canadians.

Improved regulation of railways by Transport Canada is required. CIFFC member agencies recommend several outcomes that should guide these improvements:

- Reduced risk to public safety, critical infrastructure, the environment and natural resources from wildfires caused by railway operations;
- More cooperative and proactive work by railway companies to reduce that risk;
- Clearer accountability for compliance with fire prevention rules and costs of fires that are started.
Part 1: Background

In addition to the obvious public safety risks, wildland fires cause social and economic disruption in both forested and urban areas. According to Canadian forest fire management agencies, the main causes of wildland fires that result from railway operations are:

- **Train Operations**
  - exhaust carbon emissions
  - braking / brake shoes
  - worn wheel bearings
- **Track maintenance**
  - rail grinding / cutting
  - rail welding

Unwanted human caused wildland fires can have a number of negative impacts on public safety and sustainable natural resources:

- reduced public health (from smoke inhalation) or injury;
- damage to property (both private and public);
- community disruption (including evacuations, business disruption);
- reduction of wood supplies;
- suspended public services (including recreation and tourism);
- damage to infrastructure (highway closures, damage to electricity grid, gas lines, telecommunications)

**National Statistics – 1997 to 2006**

The following statistics provide a national ten-year overview of railway fires in Canada including the number of fires, the number of hectares burnt, the costs associated with suppressing these fires and railway fires expressed as a percentage of all human-caused fires. The statistics represent both the short-line and the national railways.

It is important to note that the statistics presented are based only on fire suppression activities provided to the railways by provincial forest fire management agencies and do not include fire responses and suppression activities provided by and within municipalities.

In addition to the following national statistics, Appendix C includes a series of charts for the province of Ontario which represent a ten-year overview of fire statistics related to the large national railway companies. These charts, compared with the national charts, also illustrate that the distribution of railway caused fires across Canada is not equal.
There is a national average of 140 railway related wildland fires per year.

The average number of hectares burnt per year over the last ten-year period is 17,700. This is roughly equivalent to 32,000 football fields or 177 square kilometres or an area roughly the size of the urban area of the city of Thunder Bay, Ontario (179 sq km).
Over the last ten-year period, an average of 6.4 million dollars annually has been spent by CIFFC member agencies suppressing railway caused wildland fires.

![Graph showing Railway Fire Suppression Costs from 1997 to 2006.]

Over the last ten-year period, railway fires have accounted for 3.1 percent of all (preventable) human-caused wildland fires.

![Graph showing Railway Fires % of all Human Caused Fires in Canada from 1997 to 2006.]

Examples of Recent Railway Fires

Example 1

- The Chisholm fire, which began near a railway line May 23, 2001, destroyed 10 homes, a trapper cabin, 48 outbuildings and some vehicles, mostly in the hamlet of Chisholm, about 150 kilometres (km) north of Edmonton, Alberta;

- Windy and dry conditions created extreme fire behaviour in the Chisholm fire which burnt approximately 116,000 hectares (ha) of land - an area three times the size of the city of Edmonton;

- The characteristics associated with extreme fire behaviour are rapid spread rates, continuous crown fire development, medium to long range spotting, fire whirls and massive convection clouds;

- Firefighting efforts involved the use of:
  - 514 firefighters
  - 34 helicopters
  - 31 bulldozers
  - 201 skidders
  - 45 water trucks
  - 84 fire management personnel

- The fire severely impacted the Hamlet of Chisholm through loss of property and disruption in the lives of residents. Additionally, the forest industry lost some 4.5 million cubic metres (m³) of growing stock and over 6,300 ha of regenerated cut blocks. The area’s oil and gas industry, railway and electrical infrastructure also experienced substantial losses. The fire probably created wildlife mortality and loss of habitat and may have had negative effects on the watershed due to both the fire and efforts to control it. Added to these impacts were the costs of employing hundreds of persons, numerous heavy equipment and aircraft for an extended period while fighting the fire. The Government of Alberta spent $10 million fighting the Chisholm fire.
Example 2

- A fire just outside of Thompson, Manitoba started on May 16/03. It was spotted by a birddog aircraft returning from a mission at 12:55 - the top two pictures were taken at 12:57;
- A fire service air-tanker dropped a load of water on the fire five minutes later at 13:00 – the lower two pictures are just before and just after the tanker drop.
- The fire still blew-up very quickly and grew to several thousand hectares that day;
- Suppression costs were $565,000;
- Thompson, Manitoba can be seen at the top portion of the bottom right-hand image;
- Manitoba is still pursuing cost recovery with the railway on this fire.

This picture of the fire was taken on May 16, 2003 between 13:10 and 13:15 as the birddog left the fire for refueling - approximately seventeen to eighteen minutes after the initial photos were taken.
Example 3

- This picture was from a fire in 1995 in Saskatchewan;
- The fire was started by a single train that caused a string of fires 7 km long;
- The cause of the fire(s) was a seized brake;
- The potential for a 7 km fire-front was very real. Favourable weather conditions (i.e., no wind), early detection and a high local water table kept the fires mostly near the railway ROW.
Forest Fire Management in Canada

Forest fire management responsibilities reside with natural resource management agencies of provincial or territorial governments. Parks Canada also has a forest fire management mandate in national parks. These agencies have mandates to protect public and natural resources on provincial Crown Land from wildland fires. These agencies do not have a mandate to provide fire suppression services to industries that cause fires; the goals of government departments are to minimize the cost and impact of fires that do occur, and to manage fire on the landscape as it fulfills its natural role in supporting ecological integrity (in large parks, for example).

Forest fire management involves efforts to prevent fires and mitigate impacts, in addition to planning for and being prepared to suppress fires. Although a large number of difficult fires are caused by lightning, fires caused by human activities can have the most severe impact. Human-caused fires occur near homes and businesses, often disrupt infrastructure and are, for the most part, preventable.

Across Canada, there are prevention programs that have been put in place by forest fire management agencies for all human-caused fire groupings such as recreational activities, open burning of debris, and forest industry activities. These prevention programs include planning to limit risky activities, education and awareness campaigns, preparedness to extinguish fires that might occur, and clear penalties in the event the rules are ignored. In the case of forest industries for example, prevention activities extend to modifying or closing down operations, based on the risk of the activity, as the fire danger increases throughout the fire season. Often, public use of fire for campfires or debris burning is tightly controlled. Similar prevention programs have been attempted for railway maintenance activities such as rail grinding and are in place in some locations in the country.

All industrial activities that might cause forest fires are included in provincial compliance regimes for industrial operations. Railways are federally regulated and are not included in such programs in most cases. Those who cause fires are penalized and/or the cost of fire suppression is recovered.

Forest fire management agencies receive preparedness funding to put fire fighters, aircraft, and systems in place to be prepared for each fire season. These budgets are tightly controlled and supporting governments expect that fires will be prevented in order to minimize this expenditure. Variable expenditures, once fires occur, come from government contingency funds, as each fire season unfolds. Fire seasons are highly variable, and forest fire management agencies rely on each other for sharing of skilled staff and expensive specialized equipment, such as waterbombers. CIFFC is a world-class example of a partnership among governments designed to share critical resources such that overall costs and damages are minimized.

Compliance regimes include controls and penalties on public and industrial activities. Governments also expect that fire management agencies recover suppression costs from those responsible for fires. Typically, these recoveries are focused on the variable suppression costs of the fires, and do not include recovery of capital investments, preparedness expenditures, and damages caused by the fires.
The Canadian Wildland Fire Strategy (CWFS)

In 2005, CIFFC member agencies were given a renewed mandate from the Canadian Council of Forest Ministers to improve forest fire management in Canada. An accord was signed in October, 2005 among the provincial, territorial and federal forest ministers under the Canadian Wildland Fire Strategy (CWFS) which sets the country on a path to innovate strategically to protect Canadians, their communities, their resources, and their environment. This vision strives to bring governments together to address emerging strategic wildland fire issues by the most effective and efficient means for each jurisdiction. The CWFS will seek to balance the social, ecological, and economic aspects of wildland fire and address both the root causes and the symptoms of wildland fire management challenges through a comprehensive and integrated set of management activities.

The CWFS commits Canada and the forest fire management agencies to look for ways to expand and improve wildland fire management by emphasizing hazard mitigation, preparedness, response, and recovery activities. Enhanced public awareness of the role of fire and associated risk, innovative approaches to the application of science and technology, a standard for training of fire management personnel, and refurbishing of aging infrastructure are examples of needs that the CWFS must address. The CWFS calls for individuals, industries, and all levels of government to take systematic, comprehensive, and proactive approaches to forest fire management for a future that includes increased demands on natural resources, increased wildland-urban interaction, and climate change.
Part 2: The Effectiveness of the Railway Safety Act (RSA) in Preventing Railway Wildland Fires

The RSA was put in place in 1995 with several objectives:

- to promote and provide for the safety of the public and personnel, and the protection of property and the environment, in the operations of railways;
- to encourage the collaboration and participation of interested parties in improving railway safety;
- to recognize the responsibility of railway companies in ensuring the safety of their operations; and,
- to facilitate a modern, flexible and efficient regulatory scheme that will ensure the continuing enhancement of railway safety.

The RSA is not effectively meeting any of these objectives with respect to forest fire prevention and control. In general, the current situation can be characterized as inconsistent, adversarial and ineffective. Railways have downsized staff and increased traffic on fewer lines. Planning for fire prevention does meet the requirements of the rules and, in some areas, basic communication between railways and forest fire management agencies does not occur proactively. The following statement by a forest fire manager sums-up the relationship between the railway industry and fire management agencies “fires are routinely started by railway operations, fire management agencies put them out and then attempt to recover their costs, often in a litigious atmosphere.” This situation is not an effective regulatory framework for reducing the risk to public safety, the environment, infrastructure and natural resources. Fundamental effectiveness at ensuring public safety is not present; and there needs to be more than slight adjustments to make the system more efficient.

From the perspective of the CIFFC member agencies, the following are key issues that need to be resolved in order to reduce the risk to public safety from wildland fires that result from railway operations:

- Railway companies have made business decisions to neglect wildland fire prevention or response and to rely completely on public fire service resources and infrastructure;
- There is no mandatory requirement for the railways to report railway wildland fires to the Transportation Safety Board of Canada (TSB). TSB and Transport Canada (TC) do not investigate wildland fires;
- The Rules for the Control and Prevention of Fires on Railway Rights-of-Way are ineffective:
  - lack of responsibility and/or a mechanism for ensuring enforcement and compliance are missing or unclear;
  - poor communication between railway companies and fire management agencies, particularly related to Fire Prevention and Control Plans;
  - reliance on negotiated agreements to address suppression, prevention and mitigation performance targets and responsibilities;
  - lack of incentives and penalties associated with reducing wildland fires resulting from railway operations;
  - lack of understanding or non-acceptance of the responsibility for fire suppression costs associated with wildland fires that are started on the railway rights-of-way or as a result of railway operations;
• lack of cooperation from railway companies for fire investigations conducted by forest fire management agencies;
• lack of understanding regarding the limitations of technology that the railway industry uses.

Responsibilities

Transport Canada

It is the role of the federal government – specifically Transport Canada – to create, enforce and ensure compliance with the “Rules” which nest under the Railway Safety Act. Transport Canada clearly retains the responsibility for railway safety. Railways are inter-provincial operations, although some operate only within local areas.

Through the RSA de-regulation, the federal government included the railway industry in the development of the regulations or “Rules”; and expects them to follow those rules with less oversight or direct compliance monitoring.

Transportation Safety Board of Canada (TSB)

The mission of the Transportation Safety Board (TSB) is to conduct independent safety investigations and communicate risks in the transportation system.

When notified of an occurrence, the TSB will assess the circumstances to determine if an investigation is warranted; this assessment may involve the deployment of an investigation team to the occurrence site.

An individual occurrence will be investigated when there is high probability that an investigation will advance Canadian transportation safety, meaning there is significant potential for reducing future risk to persons, property or the environment.

The TSB also monitors general trends and emerging safety issues. The Board reviews developments in transportation safety and identifies safety risks that it believes government and the transportation industry should address to reduce further injury and loss.

The primary criterion for determining if an occurrence will be investigated is whether or not such analysis is likely to lead to a reduction of risk to persons, property, or the environment.

Railway Industry

The railway companies have corporate responsibilities to both the public and shareholders to operate in a safe manner that does not cause unnecessary negative impacts.

In the deregulated environment created by the RSA, the railway companies have been delegated a responsibility to recommend new rules or suggested changes to existing rules to TC; with a commitment that the railway industry will abide by them.
Forest Fire Management Agencies

Under the current framework, provincial and territorial governments and their forest fire management agencies are not the regulator of federal railways; it is not their role.

The mandate of the fire management agencies is to work with the railways to assist them in meeting their obligations under the RSA. Several agencies also employ provincial regulations to help ensure that the railways meet their public safety obligations. Provincial regulations are also in place to extend the RSA provisions to any provincially regulated railways.

The railways currently rely almost completely on public forest fire management agencies to suppress forest fires that result from their operations.

The Rules for the Control and Prevention of Fires on Railway Rights-of-Way (Rules) - 1995

The Rules for the Control and Prevention of Fires on Railway Rights-of-Way (Rules), under the RSA, were developed in 1995 by the Railway Association of Canada (RAC) on behalf of the railway companies. Representatives from several provincial fire agencies worked together to comment on, and attempted to strengthen those rules. While forest fire management agencies were consulted during this process, the regulation of railway safety for forest fires was ultimately unilaterally established, via the Rules, by the railways (RAC) and TC.

The Rules (see Appendix A) require that railway companies ensure that suitable measures are in place to prevent and control fires on railway rights-of-way (Section 3.1), train employees, provide qualified persons to patrol and fight fires; develop fire prevention and control plans, and establish local fire prevention and hazard reduction practices. The rules go on to require that railway companies have the responsibility to report and extinguish all fires “on the railway rights-of-way irrespective of the manner in which the fires were started; and off the railway rights-of-way that were started, or presumed to have been started, as a result of railway operations” (Section 3.3). Finally, “When the railway company cannot extinguish a fire as described herein it will request assistance from the fire service.” (Section 3.4)

Why the Rules Don’t Work

CIFFC member agencies agree that there are still fundamental public safety issues associated with the RSA and the Rules; and they are hopeful that the Rules will be rewritten and strengthened as a result of the Advisory Panel’s recommendations.

The following sections identify the key issues within the Rules that need to be resolved in order to reduce the risk to public safety from wildland fires that result from railway operations:
Enforcement/Compliance Responsibilities and Mechanisms

There are no clear or enforcement and compliance mechanisms or activities related to railways and forest fire safety; and the responsibilities associated with these activities are unclear.

The role of railway safety inspectors (federal) and fire service inspectors (provincial) are not clear. The Rules state that:

- Fire service inspectors may, at any reasonable time, enter any right-of-way for the purposes of inspecting to ensure compliance with the provisions of these rules.
- Railway companies will ensure that the instructions of the fire service inspectors in relation to the control of the fire are complied with promptly by employees of the company.

The RSA appears to assign the responsibility to inspect and ensure compliance with the provisions of these federal rules to fire service inspectors via their provincial and territorial fire management agencies. Canadian fire management agencies do not have the capacity or expertise to train their fire officers and conservation officers with the intricacies of the railway industry obligations outlined in the Rules. Provincial officers do not have any real authority related to railways operations, and doubt whether they would receive any cooperation, in carrying-out these responsibilities (stop trains, inspect trains for defective operation, access event recorder data, access dispatcher/conductor communications, access hot box detector records, etc.) as they are not designated Railway Safety Inspectors.

Performance Responsibilities Associated with Fire Suppression, Prevention and Mitigation

Railways no longer have effective ability to respond to fires on their rights-of-way. They rely almost one-hundred percent on the finite public resources of fire management agencies to fight the fires they start.

Where the rules suggest the railway company will request the assistance of the fire service if it cannot extinguish the fire on its own, the railway companies are in fact using the public fire services to replace its own efforts.

The Rules provide for railways to establish formal agreements with local fire services (Section 4.1). In 1995, fire agencies believed this would be a mechanism to reduce the adversarial situation between railways and the fire agencies. This has not been the case. After several years of effort, the first such agreement has been signed in British Columbia, largely after that province instituted tougher provincial rules to help facilitate compliance. It is still too early to tell if this mechanism will reduce the problem; or if business agreements are an appropriate way to address performance targets, incentives and penalties associated with forest fire suppression, and prevention and mitigation.
Penalties and Incentives Associated with Reducing Wildland Fires Resulting From Railway Operations

In any regulatory framework, penalties and incentives are used to encourage compliance, punish those who do not comply, and to encourage proactive activities to prevent penalties. Incentives and consequences have not been put in place through the Rules. There is no penalty system in place for dealing with non-compliance with the Rules. Fire agencies pursue suppression cost recovery, which some believe is a suitable incentive for proactive action to reduce the number of fires. In reality, the railways challenge cost recovery as a civil matter and avoid the issue of non-compliance. In fact, the risk of large costs is reduced by the effort required to prove, in court, that the railway is responsible for the fire and its cost. The Rules are clear in identifying that responsibility, but are not effective in providing a mechanism to ensure accountability or compliance. Forest fire agencies and railways disagree on the interpretation of those Rules and the federal regulator does not provide an administrative mechanism to resolve such issues.

It appears as though the risk tolerance of the national railways regarding fires that result from their operations is much higher than that of Canadian governments. From the fire management perspective, this is an unacceptable situation.

The desired outcome is to have the railways in Canada take on a more proactive role to demonstrate what they are doing to prevent fires that result from their operations; and to take responsibility for the fires that they have caused.

In summary, the Railways are relying on public resources to suppress fires they start and are ignoring their responsibilities under the RSA to prevent and control such fires themselves.

Under the current structure, railways have no inherent consequences for starting fires that result from their operations; and no incentives for fire prevention.

Responsibility for Fire Suppression Costs Associated with Wildland Fires Caused by Railway Operations

The Rules state that it is the responsibility of the railway company to extinguish all fires on the rights-of-way (Section 3.3).

However, the Rules are silent on cost recovery – although through a literal interpretation of the Rules it is clear that railways have the responsibility to extinguish fires that they start irrespective of the manner in which the fires were started. Logic would then dictate that this responsibility would also extend to the suppression costs associated with extinguishing their railway fires. Forest fire agencies and railways disagree on the interpretation of the Rules and the federal regulator does not provide an administrative mechanism to resolve such issues.

Communication between the Railway Industry and Fire Management Agencies – Particularly via the “Fire Prevention and Control Plans”
The Rules state that railway companies will ensure that suitable measures are in place to prevent and control fires through training, fire prevention and control plans and hazard reduction practices (Section 3.1).

It is through the fire prevention and control plans that measurable fire prevention and hazard reduction activities can be documented and measured. Fire management agencies have had limited success in receiving timely, quality plans from the railway companies.

Some of the CIFFC member agencies brought to light the fact that the Rules should be strengthened and/or revised to address the following two points:

- The minimum level of forest fire suppression equipment that railway companies need to have ready for wildland fire suppression purposes;
- Railway operators are required to be knowledgeable of the fire hazard level when traveling through wildlands; and the industry needs to develop "Best Practices" for mitigation strategies, shutdown procedures, institution of fire detection patrols etc. during times of high fire hazard levels.

Although the following issue is not directly associated with the Rules, it is nonetheless a major issue requiring resolution.

**Mandatory Reporting of Railway Caused Wildland Fires by the Railways to the TSB and Investigation of Railway Caused Wildland Fires by the Transportation Safety Board.**

The Transportation Safety Board Regulations (P.C. 1992-1558 July 16, 1992) state that a reportable railway accident includes when the rolling stock causes a fire or explosion that poses a threat to the safety of any person, property or the environment; and that these accidents must be reported to the Board with specific details of the incident (Section 4.1). Fires may also start from other railway operations which should also be reportable.

The Transportation Safety Board of Canada and the railways are not fulfilling their roles and responsibilities under the TSB’s legislation and regulations. Under the TSB Regulations, railway companies have a mandatory accident reporting requirement to report railway rights-of-way fires that result from their operations to the TSB. This is not occurring. The railway companies are not meeting their responsibility by generally not reporting their fires to the TSB; and the TSB is not meeting its responsibility by not pursuing the railways to report their fires.

Reporting of this metric to the TSB might encourage the railways to be more proactive and to put some emphasis into wildland fire prevention efforts, since the metric would be available annually for public and investor scrutiny. Currently, it is extremely difficult, if not impossible to get the TSB to investigate forest fires that result from railway operations. There appears to be a disconnect between the TSB’s responsibility to identify safety risks and Transport Canada’s responsibility/ability to do something about an identified public safety risk.
Part 3: Response to the Consultation Guidance Document

The RSA Review Consultation Guidance Document was prepared to assist stakeholders focus on the key issues that need to be addressed during the RSA review. This section of this submission, organizes responses and comments according to the issues and questions of the Railway Safety Act Review Consultation Guidance Document. Although some of the comments and suggestions in this section may repeat issues described above, they do highlight the fact that the public safety concerns that fire management agencies across the country share, can be attributed to a relatively small number of key concerns which, once addressed, would potentially help make today’s unacceptable situation less risky.

The following comments are listed in the same order that they are requested in the Consultation Guidance Document.

Key Issue #1 - Efficiency and Effectiveness of the Railway Safety Act

Safety Management Systems

The RSA tries to promote and provide for safety in the operation of railways using a regulatory scheme which can be adapted to the current context of the rail sector. A Safety Management System (SMS) was one tool chosen to achieve this objective, and the 1999 amendments to the RSA gave railways the authority to implement the SMS approach. An SMS is defined as a formal framework for integrating safety into day-to-day railway operations which includes: safety goals and performance targets, risk assessment, responsibilities and authorities, rules and procedures, and monitoring and evaluation processes.

There is no evidence of such an approach to prevention and control of wildland fires.

Safety goals and performance targets that address wildland fires resulting from railway operations do not exist; and consequently a culture of prevention and mitigation is not encouraged, fostered or measured.

In order for a SMS to be effective, there needs to be increased and improved communication between the railways and stakeholders affected by their operations. Due to the concerns associated with the safety of first responders and the strain that is put on finite public resources during first response (initial attack), the reduction of preventable railway caused fires is viewed in the same light as the desired reduction of all other human-caused fires through prevention and mitigation. Canadian fire management agencies are less tolerant today of the risks posed by railway caused wildland fires because of: the fact that these fires are preventable; increased urban settlement (threat of evacuations); increased values and infrastructure on the landscape; negative socio-economic impacts (business disruption); impacts on public health (smoke, stress); strain on finite public resources; and increasing wildfire risk associated with climate change.

Railway companies have a higher risk tolerance for wildland fires that result from their operations than Canadian fire management agencies do. If the railway companies undertake any risk assessment at all, they would appear to be driven by cost considerations (cost of doing business) rather than by
public safety considerations. As an example, wildland fires that result from railway operations are each reported three times to the railway companies by the fire service in Ontario; once to Rail Traffic Control (RTC), once to the Track Supervisor and once to the company Claims Manager – therefore positioning the company to undertake a public safety related risk assessment in order to mitigate and prevent future wildland fires that might result from their operations.

Transport Canada and the Transportation Safety Board also seem to have a higher risk tolerance for the public safety threat posed by wildland fires resulting from railway operations as they fail to recognize these fires as a serious public safety threat. It is possible that risk assessment by the federal regulator suggests there are greater risks to public safety from railways operations. If this is an explicit decision of the regulator, it has not been communicated to stakeholders.

The RSA directs railway companies to implement Safety Management Systems allowing for greater involvement of relevant/affected organizations in the rule making process. The railways (via the Railway Association of Canada) should not have the final input on determining the rules, particularly when a relevant/affected organization disagrees with the draft rules when they are in development. At the very least, an appeal process (third-party or federal regulator as arbitrator) is required.

A literal interpretation of the “Rules” places the responsibility for all railway fires on railway rights-of-ways, irrespective of the cause, on the railways. What powers and authorities do Fire Service Inspectors (provincial) have to ensure compliance with the “Rules” in these matters; and how is this addressed through their SMS’s?

Other matters concerning public safety (i.e. Highway Crossing at Grade Regulation) are regulated rather than addressed through rules developed by the Railway Association of Canada (RAC). Why are public safety risks associated with the control and prevention of fires on railway rights-of-way determined by rules, set out by industry, rather than regulations set out by the RSA (federal government) when both are issues of public safety?

Monitoring, Audit, Inspection and Enforcement
The regulatory scheme of the RSA is intended to be coordinated, transparent, forward-thinking and accountable to the citizens it serves. It is also intended that compliance with the RSA should be facilitated by regulatory requirements that are clear and readily enforceable.

For the purpose of controlling and preventing fires on railway rights-of-way, TC, the TSB and the railway companies do not effectively carryout their responsibility to monitor and inspect rail operations related to safety. The positions of TC the TSB and the railway companies are not proactive. TC and the TSB are also not reactive to wildland fire issues; there is no compliance regime in place at the federal level.

Railway companies do not report forest fires on their rights-of-way to the TSB. The TSB does not investigate fires on the railway rights-of-way. Auditing of rail operations is not carried out effectively by Transport Canada or by railway companies as there is a lack of auditable data – due to the non-compliance with the “Rules” regarding the timely submission of quality fire prevention
plans. The lack of data can also be attributed to the fact that the requirement for railway companies to report their fires to the TSB is not being met.

Railway companies do not provide for quality assurance, effective monitoring and inspection of track and equipment. This is evidenced by fires that result from faulty equipment, faulty track or employees not following direction. It is not clear whether TC and/or the TSB understand the risks associated with faulty/worn equipment, fires (accidents) not being reported, non-compliance with the “Rules”; fires (accidents) are not being investigated by the federal authorities who have these responsibilities.

There appears to be an over-reliance on automated processes and technology – event recorders, hot-box detectors, dragging chain detectors, and composite brake-shoes. For example, the railways suggest composite brake shoes don’t cause fires and that hot-box detectors pick-up hot boxes and the railway responds. However, even with new technology in place, provincial fire management agencies continue to see a high occurrence of fires from braking and overheated equipment.

Finally, the current compliance regime does not provide for simple investigations of wildland fires. For example, the freight and passenger car rules only require that safety inspection records be retained for sixty to ninety days. This time-frame is not adequate for auditing and investigation purposes.

**Human Factors, Safety Awareness and Public Information**

Railway safety systems are intended to develop procedures that call for specific behaviour in different situations, recognizing that systems cannot cover all types of situations, and individuals must sometimes rely on their own judgement and reflexes.

When examining or investigating human factors and safety awareness, a source of data is often the locomotive’s event recorder. The event recorder data is overwritten every six to seven days and often, unless the investigation/inspection regime is extremely fast, there is a risk that the event recorder data will be lost for any future enforcement/compliance activities that might be required to prevent and mitigate the public safety risk.

There are key human factor/safety awareness questions that the railways and the federal regulator need to consider in the context of the public safety risk presented by wildland fires that result from railway operations:

- Does the railway “track profile” take forest fire management issues into account?
- Do railway companies/regulators audit the event recorder data to determine if train crews conducted themselves according to the direction provided by the track profile taking forest fire management issues into account?

**Key Issue #2 - Provisions and Operation of the RSA**

**Enforcement Powers**

Transport Canada can issue orders in various circumstances in accordance with the provisions of the RSA, and such orders could ultimately be enforced via prosecution in the courts. There is no
provision for Transport Canada to issue penalties through administrative action for infractions in the rail sector, as it may in the aviation and marine sectors.

There is no penalty structure or disincentive for non-compliance with the Rules. Fire Service Inspectors have no ability to ensure compliance with the RSA or the Rules and must rely upon provincial legislation which does not regulate federally regulated railways. Federal Railway Safety Inspectors and provincial Fire Service Inspectors must presently rely (reactively) solely upon the court system to ensure compliance with the RSA and the Rules. In the absence of administrative measures and penalties, compliance and enforcement, actions can only occur voluntarily by the railway. The fact there are no regulatory repercussions for starting a fire (or several hundred fires over a summer) suggests wildland fires are an accepted part of railway operations. The Rules state that if railway companies start a fire, they are responsible to extinguish the fire and request the assistance of the local fire service if they cannot. Currently, fire services render such assistance, but must pursue recovery of the cost of suppression in a civil proceeding.

Consequences for the railways need to be built into their Safety Management Systems and TC needs more authority and capacity to enforce the RSA and the Rules. It is remarkable that since 1995, when the Rules came into effect, the TC’s Ontario Region office has never used the Rules as a justification for the issuance of a TC Order. In the same timeframe the province of Ontario had to deal with approximately 570 wildland fires that resulted from railway operations.

One type of incentive/disincentive system that would be effective in facilitating compliance with the RSA and the Rules would be the creation of a metric related to a “safety system”, which would be available for public audit. A public record, associated with the mandatory reporting by the railway industry of wildland fires resulting from their operations to the TSB and TC, would act as an incentive for the railway industry to minimize the number of wildland fires that they cause. Since all fires start out small and have the potential to become serious public safety threats, all fires regardless of final size and final cost of suppression would need to be reported by the railway companies.

Rule Making, and Consistency of Rule Application
Safety rules are developed by a railway company either on its own initiative, or following an order from the Minister (all rules have the force of law and must be approved by the Minister). In the case of the Rules, railway companies worked through their industry association (RAC) to develop a set of rules that apply industry-wide.

The current rule development process is not in keeping with the objectives of the RSA as the consultation offered to affected stakeholders is not meaningful. In the event of a difference of opinion between an affected stakeholder and the railway industry, it is ultimately the railway industry (via RAC) that unilaterally decides on the wording of the version of the rules that is then recommended for sign-off by the federal Minister of Transport. This process takes place with very little oversight by TC; and does not encourage future collaboration and participation by affected stakeholders. TC (or some other arms-length third party) should play a more active facilitation role in the rule development process. An appeal mechanism needs to be put in place so that differences of opinion between the railway industry and its affected stakeholders can be dealt with fairly, particularly in matters of public safety.
The use of the Rules affects compliance and enforcement across Canada as the Rules lack compliance authorities for Fire Service Inspectors (provincial) and for Railway Safety Inspectors (federal).

The Rules were written and adopted with too many “grey-areas”. As an example, the Rules can be interpreted as being silent on the recovery of forest fire management agency fire suppression costs expended to extinguish railway caused fires - leading to varied and inconsistent interpretations across the country.

Ministerial Authority and Delegation
The federal Minister of Transport has the authority to regulate and to take administrative action in several specified areas of railway safety. Some administrative powers are delegated directly to TC inspectors (under Part IV of the RSA).

Although certain functions appear to be delegated to Railway Safety Inspectors (federal) under the RSA, the Rules appear to indicate that it is the responsibility of the Fire Service Inspectors (provincial) to ensure compliance with the Rules.

Canadian fire management agencies believe that the federal government, via the Minister of Transport, should be responsible for all matters that may arise that are related to the safe operation of railways under federal jurisdiction.

The current approach affects compliance and enforcement for federally regulated railways. Fires that result from railway operations (mandatory reportable accidents) are not being reported by the railways to the TSB or to TC; and it is unclear whether fires that start from railway operations besides rolling stock are even reportable. As a consequence, the investigative process is not being implemented to determine fire causation and to subsequently put measures in place to prevent and mitigate the cause of the fires. Fire Service Inspectors (provincial) and TC inspectors lack the authority to ensure compliance with the RSA and with the Rules.

The current approach does not lend itself to consistent enforcement due to the unenforceability of the Rules and the amount of room within the Rules for inconsistent interpretation.

Defining Engineering Requirements
The RSA prescribes that all the engineering work relating to railway works shall be done in accordance with sound engineering principles, and that a professional engineer shall take responsibility for the engineering work.

Engineering requirements (design) should take the risk of fire starts and the threat of fires into consideration.
Key Issue #3 - Environmental Concerns With Respect to Railway Transportation and Accidents

Protection of the Environment
The RSA provides for the federal government to make regulations governing the release of pollutants into the environment from the operation of railway equipment.

The definition of “the environment” under the RSA is too narrow. The definition needs to take into account the numerous potential detrimental effects on public safety and the environment from fires that result from railway operations such as loss of vegetative cover, slope instability, air quality, water quality, road closures, evacuations, carbon sequestering, etc. This also applies to fires that start on the rights-of-way and spread to adjacent lands.

Responding to an Emergency
The railway industry relies principally (almost 100%) upon public agencies, public infrastructure and public resources (at both the municipal and provincial levels) and lacks the internal capacity and the capability to adequately respond to forest fires that it has caused. In light of emerging and predicted climate change impacts, increased values on the landscape, increased rolling-stock traffic and the increased reliance by the railway industry on public agencies for a response to railway fires; railway companies need to formalize the relationship with these public agencies.

Two potential vehicles that could be employed to formalize the relationship might be the establishment of a “national railway code of conduct” related to wildland fires that result from railway operations; or through the strengthening of the requirement (from “may” to “shall”) allowed for under the Rules related to the establishment of Agreements between the railways and the local fire service (provincial). It has been the national experience of forest fire management agencies that although the Rules allow for the establishment of Agreements, the railway companies have been reluctant to participate in substantive agreement discussions; and generally only respond positively to agreement talks when forced there by a significant wildland fire event. This is not a very proactive modus operandi.

Key Issue #4 – Addresses “Interface with Non-Railway Users (Crossings, Trespassing and Vandalism) and is not applicable to fire management issues.

Key issue #5 - Related Railway Safety Issues

Collection and Dissemination of Railway Safety Data
The mandatory accident reporting requirement, found in the TSB directives and which directs the railway companies to report their rights-of-way fires as accidents to the TSB, is not being met.

The requirement under the Rules for railway companies to report fires that they have extinguished to the local fire service is generally not being met.

The electronic data that railways collect, along with their technical records and the invoices that they receive from fire management agencies for suppression services, should provide enough data for the
railway companies to undertake a risk management analysis for wildland fires that result from their operations – although this does not appear to be the case.

The development of a *Safety Rating System* could potentially augment the compliance and reporting aspects of a SMS. As an example, a publicly auditable black-mark on the safety record of a railway company would provide a consequence for the action or inaction of the railway company as it relates to the starting of wildland fires.

The process for timely access to available data is not clearly understood. The data that is currently collected is not sufficient to assess rail safety performance effectively, vis-à-vis wildland fires that result from railway operations.

**Economic Trends**
The trend towards more rail traffic, more values on the landscape, stronger competition, negative climate change implications, greater public impacts and an increasing reliance on public agencies to respond to railway caused wildland fires could potentially be addressed through the establishment of a national code of conduct or through the establishment of mandatory modern agreements between the railways and fire management agencies across the country.

**Advanced Technologies and Their Use**
The railway industry and TC should investigate new technologies that would help to prevent and mitigate the occurrence of wildland fires that result from railway operations.
Conclusions

The current situation is unacceptable. The regulation, enforcement and compliance mechanisms required to ensure compliance with the Rules to prevent wildland fires under the Railway Safety Act do not exist consistently across the country. Forest fire management agencies have responded in various ways to the gaps – first and foremost by responding to the fires that occur and extinguishing them. Provincial regulations, discussions with the railway companies, cost recovery, and litigation have not been effective at implementing the intent of the 1995 Rules.

There is increased risk of impact on the public and on communities in and around railways and forests. Railway operations have changed, as you are aware. Extreme events associated with climate change (more fires with greater potential for impact to property, infrastructure, and natural resources) are a growing concern for provincial and territorial governments. We need to establish a framework now to avoid problems in the future.

Most railways are federally regulated and operate on private land. The responsibility to establish a Canada-wide framework that provides solutions to these issues is a TC and railway responsibility. Provinces will follow the TC lead and harmonize those rules so they apply to provincially regulated railways.

The railways do not follow the intent of the Rules. There is no compliance regime to protect the public interest or ensure implementation of the Rules. The current relationship is one where railway operations start wildland fires – fire management agencies extinguish the fires – fire management agencies try and recover their costs.

This review of the RSA provides a critical opportunity to recover from the effect of deregulation that took place in the 1990’s. CIFFC member agencies participated in consultation that took place when the RSA was created, with similar concerns, and committed to work within the federal regulatory framework that was put in place. In the last decade, forest fire management agencies have struggled to make this work. Several agencies have put more stringent rules in place provincially, fixing some gaps, but exacerbating the patchiness and inconsistency of the application of railway safety. CIFFC member agencies have been discussing these issues in recent years and have formed this Task Team to work with TC to improve the situation. Following this initial consultation, forest fire management agencies expect movement toward a workable compliance structure. We will work with the federal regulators in designing and implementing such a system which should include:

- Clear accountability for fire prevention and costs;
- Penalties and incentives to take corrective action;
- Reporting of fires (including those within cities) to the Transportation Safety Board of Canada and to Transport Canada;
- Increased inspection/enforcement/compliance regime by the federal regulator, Transport Canada; to deal with risks in a proactive rather than a reactive manner.

The railway industry and Transport Canada should investigate new technologies to prevent and mitigate the occurrence of fire starts from railway operations.
SCOPE

1.1 These rules are intended to ensure that there are in place acceptable methods to prevent the starting of fires and to control fires that may be started on railway rights-of-way.

1.2 These rules apply to all railway companies subject to the jurisdiction of Transport Canada pursuant to the Railway Safety Act.

1.3 These rules apply to all railway rights-of-way with respect to the prevention and control of fires.

2. DEFINITIONS

In these Rules:
2.1 "department" means the Department of Transport, Surface Group;
2.2 "extinguish" means to cause the arrest of burning where all signs of combustion (heat, light and smoke) have been eliminated;
2.3 "fine fuels" means fuels that ignite readily and are consumed rapidly by fire (e.g. cured grass, fallen leaves, needles, small twigs);
2.4 "fire patrol" means qualified employees with approved forest fire suppression equipment assigned to patrol railway rights-of-way at specific intervals;
2.5 "fire service" means the federal, provincial, municipal or territorial ministry or department that is responsible for the prevention, detection and control of fires in the area adjacent to the right-of-way;
2.6 "fire service inspector" means a person designated by the fire service and who is qualified in the prevention and control of fires;
2.7 "hazard reduction" means removal or treatment of fine fuels to diminish the likelihood of a fire starting and to lessen the potential spread and resistance to control;
2.8 "qualified person" means, in respect of a specified duty, a person who, because of his/her knowledge, training and experience, is qualified to perform that duty safely and properly and who is proficient in the use of fire equipment on hand;
2.9 "rights-of-way" means railway operated rights-of-way.

3. GENERAL PRINCIPLES

3.1 Railway companies will ensure that suitable measures are in place to prevent and control fires on railway rights-of-way through the provision of:

3.1.1 training for employees;

3.1.2 sufficient qualified persons to ensure fulfillment of fire patrol and fire fighting requirements;

3.1.3 fire prevention and control plans developed in conjunction with the applicable fire service; and
3.1.4 local fire prevention and hazard reduction practices, to be established and implemented in consultation with the appropriate fire service.

3.2 Railway companies will ensure that their employees are fully knowledgeable with the fire reporting requirements of the fire service for the areas in which they are working. They will also ensure that the appropriate fire service and railway employees are immediately notified of the existence and the location of the fire.

3.3 It is the responsibility of the railway company to extinguish all fires:

3.3.1 on the railway rights-of-way irrespective of the manner in which the fires were started; and

3.3.2 off the railway rights-of-way that were started, or presumed to have been started, as a result of railway operations.

3.4 When the railway company cannot extinguish a fire as described herein it will request assistance from the fire service.

3.5 Fire Service Inspectors

3.5.1 Fire service inspectors may, at any reasonable time, enter any right-of-way for the purposes of inspecting to ensure compliance with the provisions of these rules.

3.5.2 Railway companies will afford reasonable transportation to fire service inspectors for the fulfillment of their duties.

3.5.3 Railway companies will ensure that the instructions of fire service inspectors in relation to the control of a fire are complied with promptly by employees of the company.

4. REQUIREMENTS

4.1 Railway companies will make available for inspection by the Department plans setting out the manner in which they will comply with the provisions of subsection 3.1 above. These may include the entering into of agreements with fire services establishing implementation practices and understandings for local conditions.

4.2 Railway companies will ensure that qualified employees are:

4.2.1 qualified through training, and fully conversant with the requirements of these rules, and any instructions issued in accordance therewith; and

4.2.2 in compliance with the requirements of these rules, and any instructions issued in accordance therewith, when engaged in their duties.
APPENDIX B

Excerpts from

Canadian Transportation Accident Investigation and Safety Board Act 1989, C.3

- "railway occurrence" means
  (a) any accident or incident associated with the operation of rolling stock on a railway, and
  (b) any situation or condition that the Board has reasonable grounds to believe could, if left
  unattended, induce an accident or incident described in paragraph (a);

- "rolling stock" means every description of car or other railway equipment that is designed for
  movement on its wheels along a line of railway and, without limiting the generality of the
  foregoing, includes any locomotive, engine, track motor car, tender, snow-plough, flanger
  and railway crane that is so designed;

- The object of the Board is to advance transportation safety by:
  (a) conducting independent investigations, including, when necessary, public inquiries, into selected
      transportation occurrences in order to make findings as to their causes and contributing factors;
  (b) identifying safety deficiencies as evidenced by transportation occurrences;
  (c) making recommendations designed to eliminate or reduce any such safety deficiencies; and
  (d) reporting publicly on its investigations and on the findings in relation thereto.

- Subject to section 18, the Board may investigate a transportation occurrence where a
  department, the lieutenant governor in council of a province or the Commissioner of the
  Northwest Territories or Nunavut, or the Commissioner of Yukon with the consent of the
  Executive Council of that territory, requests the Board to investigate and undertakes to be
  liable to the Board for any reasonable costs incurred by the Board in the investigation.

15. (1) Where, at any time during an investigation into a transportation occurrence under this Act, a
department other than the Department of National Defence investigates that transportation
occurrence or undertakes remedial measures with respect to that transportation occurrence, the
Board and the department shall take all reasonable measures to ensure that their activities with
respect to that transportation occurrence are coordinated.

- 15.1 (1) The Board may enter into an agreement with a province concerning the
  exercise by the Board of powers and functions relating to investigations into
  transportation accidents, incidents and situations or conditions that could, if left
  unattended, induce an accident or incident that are within the legislative authority of
  the province. The agreement must provide that the province undertakes to be liable to
  the Board for any reasonable costs incurred by the Board in the investigation.

"reportable railway incident" means an incident resulting directly from the operation of rolling stock…
"special situation" means any situation or condition that the Board has reasonable grounds to believe could, if left unattended, induce an accident or incident; (situation spéciale)

"reportable railway accident" means an accident resulting directly from the operation of rolling stock, where
(a) a person sustains a serious injury or is killed as a result of
   (i) being on board or getting on or off the rolling stock, or
   (ii) coming into contact with any part of the rolling stock or its contents, or
(b) the rolling stock
   (i) is involved in a grade-crossing collision,
   (ii) is involved in a collision or derailment and is carrying passengers,
   (iii) is involved in a collision or derailment and is carrying dangerous goods, or is known to have last contained dangerous goods the residue of which has not been purged from the rolling stock,
   (iv) sustains damage that affects its safe operation, or
   (v) causes or sustains a fire or explosion, or causes damage to the railway, that poses a threat to the safety of any person, property or the environment; (accident ferroviaire à signaler)

4. (1) Subject to subsection (5), where a reportable railway accident or incident takes place, the railway company, the track operator and any crew member aboard the rolling stock involved in the accident or incident shall report to the Board as much of the information listed in subsection (2) as is available, as soon as possible and by the quickest means available.
(2) The report referred to in subsection (1) shall contain the following information:
   (a) the train number and direction;
   (b) the names of the railway company and of the track operator;
   (c) the names of the crew members;
   (d) the date and time of the accident or incident;
   (e) the location of the accident or incident by reference to a mileage and subdivision location and, where applicable, the track designation in a yard;
   (f) the number of crew members, passengers and other persons that were killed or sustained a serious injury;
   (g) a description of the accident or incident and the extent of any resulting damage to the rolling stock, the railway, a commodity pipeline, the environment and other property;
   (h) a summary description of any dangerous goods contained in or released from the rolling stock;
   (i) in the case of a reportable accident, the anticipated time of arrival of wreck-clearing equipment; and
   (j) the name, location and title of the person making the report.

(3) In addition to the reporting requirements set out in subsection (1), the person making the report shall, in a form approved by the Board, submit to the Board within 30 days after the accident or incident all the information listed in subsection (2), unless otherwise exempted by the Board pursuant to subsection (4).

(4) The Board may exempt a person from submitting the information referred to in subsection (3) where the Board has gathered the information through its own investigation of the accident or incident.

(5) Where any person required to do so pursuant to subsection (1) makes a report to the Board, no other person referred to in that subsection is required to make a report.
Appendix C

Ontario Railway Fire Statistics

NATIONAL RAILWAY FIRES-ONTARIO
1996-2005

AREA BURNED (HA)
ATRIBUTED TO NATIONAL RAILWAYS - ONTARIO
1996-2005
NUMBER OF FIRES & AREA BURNED BY SIZE CLASS - ONTARIO
NATIONAL RAILWAYS 1996-2005

ONTARIO MINISTRY OF NATURAL RESOURCES SUPPRESSION COSTS
ATTRIBUTABLE TO NATIONAL RAILWAY FIRES
1996-2005
(DOES NOT INCLUDE SUPPRESSION COSTS INCURRED BY OTHER AGENCIES
i.e. MUNICIPALITIES)
Number of Fires and Percent of Total by Human Causal Groups
Inside the Fire Regions of Ontario
(10 Year Average of All Human Caused Fires)

<table>
<thead>
<tr>
<th>General Cause</th>
<th># Fires (1996 to 2005)</th>
<th>% of Total</th>
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</thead>
<tbody>
<tr>
<td>Industrial Forest</td>
<td>375</td>
<td>6.3</td>
</tr>
<tr>
<td>Industrial Other</td>
<td>114</td>
<td>1.9</td>
</tr>
<tr>
<td>Incendiary</td>
<td>263</td>
<td>4.4</td>
</tr>
<tr>
<td>Miscellaneous</td>
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<td>19.6</td>
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<tr>
<td>Recreation</td>
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<td>11.1</td>
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<td>227</td>
<td>3.8</td>
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<tr>
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<td>100.0</td>
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