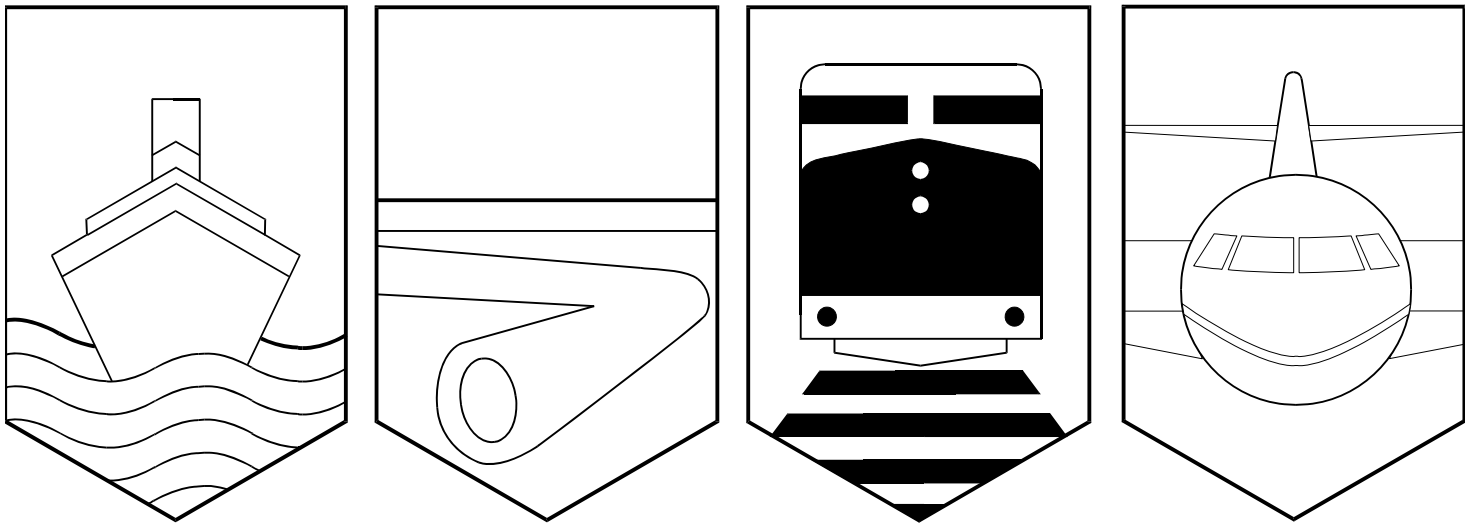
Transportation Safety Board of Canada

Bureau de la sécurité des transports du Canada



RAILWAY OCCURRENCE REPORT

CROSSING ACCIDENT

CANADIAN PACIFIC LIMITED
CP 0759 CHURCHILL YARD ASSIGNMENT
MILE 0.24, ELLISON SPUR LEAD
OFF MILE 107.39, TABER SUBDIVISION
LETHBRIDGE, ALBERTA
30 MARCH 1994

REPORT NUMBER R94C0035

Canada

MANDATE OF THE TSB

The Canadian Transportation Accident Investigation and Safety Board Act provides the legal framework governing the TSB's activities. Basically, the TSB has a mandate to advance safety in the marine, pipeline, rail, and aviation modes of transportation by:

- conducting independent investigations and, if necessary, public inquiries into transportation occurrences in order to make findings as to their causes and contributing factors;
- reporting publicly on its investigations and public inquiries and on the related findings;
- identifying safety deficiencies as evidenced by transportation occurrences;
- making recommendations designed to eliminate or reduce any such safety deficiencies; and
- conducting special studies and special investigations on transportation safety matters.

It is not the function of the Board to assign fault or determine civil or criminal liability. However, the Board must not refrain from fully reporting on the causes and contributing factors merely because fault or liability might be inferred from the Board's findings.

INDEPENDENCE

To enable the public to have confidence in the transportation accident investigation process, it is essential that the investigating agency be, and be seen to be, independent and free from any conflicts of interest when it investigates accidents, identifies safety deficiencies, and makes safety recommendations. Independence is a key feature of the TSB. The Board reports to Parliament through the President of the Queen's Privy Council for Canada and is separate from other government agencies and departments. Its independence enables it to be fully objective in arriving at its conclusions and recommendations.

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Railway Occurrence Report

Crossing Accident

Canadian Pacific Limited
CP 0759 Churchill Yard Assignment
Mile 0.24, Ellison Spur Lead
off Mile 107.39, Taber Subdivision
Lethbridge, Alberta
30 March 1994

Report Number R94C0035

Synopsis

The Canadian Pacific Limited (CP) 0759 Churchill Yard Assignment was backing southward over the Crowsnest Trail (Highway No. 3) public crossing when the leading car was struck by an eastbound loaded dump truck. A yard foreman and a yardman were on the platform of the leading car. The truck driver was fatally injured. As a result of the impact, the leading rail car derailed into the corner of a concrete block building, part of which collapsed, pinned and seriously injured the yard foreman. The yardman sustained a minor elbow injury when he jumped from the rail car just before impact.

The Board determined that the truck's braking system was severely compromised by mechanical deficiencies and the truck could not be stopped clear of the crossing.

Ce rapport est également disponible en français.

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1.0 Factual Information

1.1 The Accident

The Canadian Pacific Limited (CP) 0759 Churchill Yard Assignment departed Churchill Yard in Lethbridge, Alberta, bound for the Ellison Flour Mills' service track with an empty covered hopper car marshalled behind the two locomotives and three empty covered hopper cars ahead of the locomotives. The air brake systems on the rail cars were not charged. The yard assignment entered the Ellison Spur lead track travelling in reverse and approached the Crowsnest Trail (Highway No. 3) crossing. The yard foreman and yardman were positioned on the end platform of the leading ("A") end of the leading 54-foot covered hopper car, controlling the movement. The locomotives were coupled long hood together and both locomotive headlights were on bright.

The locomotive engineer sounded the whistle and activated the locomotive bell as the movement neared the crossing. Once the leading covered hopper car occupied the signal circuit, the locomotive engineer noticed that the crossing's automatic warning devices were operating properly. The yard foreman and the yardman determined that the westbound vehicle traffic was stopped clear of the crossing before they allowed the movement to proceed onto the crossing. At this time, they noticed an eastbound dump truck crest the 13th Street overpass. When their movement was in the middle of the crossing and it became apparent that the dump truck was not going to stop clear of the crossing, the yardman jumped from the movement and ran to the south. The truck struck the rail car and sent it into the northwest corner of an adjacent building. The building's concrete block wall collapsed onto the leading end of the car, trapping the yard foreman.

Two Lethbridge police officers who witnessed the accident radioed for help, assisted the yard foreman and attempted to assist the driver of the truck. Additional Lethbridge police, ambulance and fire department personnel responded immediately to the accident.

1.2 Injuries

The truck driver was fatally injured.

The yard foreman sustained pelvic and leg injuries and the yardman sustained a minor elbow injury.

1.3 Damage to Equipment

The leading covered hopper car was destroyed.

1.4 Other Damage

The dump truck was destroyed and the concrete block building was extensively damaged.

1.5 Personnel Information

The train crew included a yard foreman, a locomotive engineer and a yardman. They were qualified for their respective positions and met fitness and rest standards established to ensure the safe operation of trains.

1.6 Train Information

The yard assignment was powered by locomotives Nos. CP 3093 and CP 3080 and was handling four empty hopper cars. It was about 400 feet in length and weighed approximately 350 tons.

1.7 Method of Train Control

Traffic on the Ellison Spur track is controlled by the Canadian Rail Operating Rules (CROR) and Taber Subdivision Time Table Footnote 12.4.

The second paragraph of Taber Subdivision Footnote 12.4 states:

> At public crossing of "Crowsnest Trail", all movements must stop at STOP signs before obstructing crossing.

CROR Rule 103.1(d) states:

> At a public crossing at grade where special instructions require that warning devices be operated by pushbutton, or other appliances, or that train or engine movements stop at stop signs, train or engine movements affected must not obstruct the crossing until the warning devices have been operating for at least twenty seconds.

1.8 Weather

The weather was clear and calm with a temperature of six degrees Celsius.

1.9 Recorded Information

Event recorder data from a recorded time of 0921:09 mountain standard time (MST) and a distance of 1.268 miles (the time and distance after switching at the entrance to the Ellison Spur was completed) revealed the following:

TIME	THROTTLE	DISTANCE (MILES)	SPEED (mph)	ACTIVITY
0921:34	0	1.332	12.6	brake application (3 pounds per square inch (psi))
0921:50	0	1.382	8.7	whistling & bell ringing started
0921:58	0	1.400	7.7	brake cylinder pressure remaining at 3 psi
0922:04	0	1.414	7.7	brake application (22 psi)

0922:07	0	1.420	4.8	brake application (20 psi); whistling & bell ringing continuing
0922:11	3	1.424	3.9	brakes released; whistling & bell ringing stopped
0922:15	3	1.430	7.7	brakes re-applied (12 psi); whistling and bell ringing returned
0922:20	3	1.444	9.7	brake cylinder pressure rising to 20 psi
0922:25	2	1.457	10.6	momentary operator-initiated emergency brake application
0922:27	0	1.463	7.7	brake application increasing
0922:30	0	1.465	0	brake application (25 psi); movement stopped

1.10 Occurrence Site Information

From the main track, the Ellison Spur lead track descends westward and parallel to the Crowsnest Trail on a one per cent grade for a distance of approximately 750 feet to a sharp left-hand curve southward over the crossing at an approximate 32-degree angle. The track is level and tangent over the roadway, a distance of approximately 167 feet. The track length over the westbound lanes is 80 feet and the median covers 27 feet. It travels 60 feet over the eastbound lanes. The track then curves right (westward) and again parallels the highway. From the north, the crossing circuit for the automatic warning devices is located 52 feet from the edge of the roadway. Railway stop signs are positioned just before the crossing on each side of the roadway.

The maximum permissible train speed on the Ellison Spur lead track is 15 mph.

The Crowsnest Trail is a four-lane roadway. A concrete median separates the eastbound and westbound lanes.

Railway advance warning signs are located approximately 100 metres before the crossing on both sides of the eastbound lanes. Speed restriction signs of 70 km/h (from 80 km/h) are located approximately 150 metres before the tracks. The automatic flashing light masts are located on the concrete median and on either edge of the roadway. The bell is located on the south signal mast.

Vehicular traffic averages 18,000 vehicles per day and train movements vary between two and four each day.

A pedestrian overpass spans the Crowsnest Trail, the railway crossing and the tracks at the crossing. Street lights are located on the median. Neither the pedestrian overpass nor the street lights restrict a motorist's view of the automatic warning signals which are clearly visible after cresting the 13th Street overpass 400 metres west of the crossing.

The pavement was dry. No skid marks in the eastbound lanes were noted.

1.11 Medical, Autopsy and Toxicological Information

1.11.1 Medical History

The driver suffered a heart attack in July 1990. In November of that year, he had two vessel coronary bypass grafts.

In July 1992 and again in June 1993, he underwent medical examinations to determine his medical fitness to drive. This included exercise stress testing to stage 4 of a Bruce protocol, achieving METS of 9.1 and 7.7 respectively. Neither ischemia nor arrhythmias were detected. Non-insulin-dependent diabetes mellitus was controlled by oral medication and diet. He did not smoke or drink and was quite active. After each evaluation, the driver was determined to be fit under provincial standards for a Class 1 license to drive his vehicle for a year.

The week before the accident, he had complained of pain in his right shoulder and chest area. Since he thought that it was due to overwork, he did not seek medical attention.

1.11.2 Autopsy and Toxicological Results

The autopsy determined that the driver died as a result of multiple injuries sustained in the collision.

Both aorta coronary bypass grafts were intact. The right-side graft passed posteriorly and anastomosed with a smaller vessel which was 75 to 89 per cent stenosed distal to the anastomosis.

There was no indication of recent myocardial infarction. Several old areas of transmural infarction were seen.

Post-mortem toxicological testing detected no evidence of alcohol or drugs. The blood sugar level was within normal limits and no acetone was present. A trace level (less than five per cent) of carbon monoxide was found.

1.12 Dangerous Goods

Diesel fuel leaked from one of the tanks of the dump truck, prompting first responders to spread fire-retardant foam on the ground around and under the truck to minimize the risk of fire.

1.13 Other Information

1.13.1 The Truck

1.13.1.1 Post-accident Mechanical Inspection

A post-accident examination of the vehicle, a 1980 white, tandem axle Western Star, licensed for a maximum gross vehicle weight of 22,000 kg and manufactured in Kelowna, British Columbia, revealed that the brake lamp switch was inoperative and the rear suspension was badly worn. Only the right No. 2 brake was fully operational but backed off, reducing the effective braking on this wheel by about 20 per cent. The brake drum displayed discolouration from overheating. The left No. 2 brake shoes did not contact the drum and the left No. 3 brake drum was broken in three places. The right No. 3 brake had a bent spider, allowing the brake shoe rollers to slip off the "S" cam, rendering the brake inoperative.

The vehicle was not equipped with steering axle brakes.

1.13.1.2 Truck History

In May 1993, a dealer in possession of the truck as a tractor truck determined that it required $1,618.00 in repairs and new tires to place it in a roadworthy condition for sale. The repair list included a brake adjustment, a battery replacement and work on the lights, clutch, body hardware, driver's seat-belt, air compressor, relay valve securement, rear axle air lines, steering box seals, steering box V joint, exhaust pipe, transmission V joint, and the fifth wheel.

In light of the need for extensive repairs, the dealer sold the truck "as is" at an auction on 05 October 1993. The truck was subsequently re-sold "as is" to the wife of the deceased on 30 October 1993.

Prior to the occurrence, the deceased fitted a box to the tractor truck, converting it to a dump truck. On 14 December 1993, the truck passed an inspection by an Alberta Transportation and Utilities Certified Inspection Mechanic and an Alberta Inspection Certificate was issued. The inspection certificate indicated that repairs had been made to the brake system components and the steering linkage. All other systems and components including the brake drums were listed as "OK".

From the inspection to the time of the accident, the vehicle travelled 2,095 km and was being operated in a loaded condition for the first time on the day of the accident.

1.13.1.3 The Inspection Process

The truck inspection, carried out on 14 December 1993, followed the Alberta Commercial Vehicle Inspection Standards Checklist. The inspection identified several areas requiring repair including the replacement of the slack adjuster on the No. 3 right axle, king pins, front wheel bearings and an airbrake release valve. The wheels and brake drums were not removed. The required checks of brake shoe lining and drum wear, conducted through the inspection ports, revealed no mechanical problems. Brake drum integrity was checked by both a visual external inspection and by tapping with a small hammer to detect a "thud" as opposed to a "ringing" from an uncracked drum. No cracks were detected.

The inspecting garage owner advises that, when the vehicle was passed by him, it met standards, and that any mechanical deficiencies or mis-adjustments that existed at the time of the accident occurred from truck operation or actions of the owner after the inspection.

1.13.1.4 The Driver

On 12 July 1993, the driver was issued an Alberta Class 1 operator's licence. He was required to wear corrective lenses while driving and submit to an annual medical examination to confirm his medical status.

The night before the accident, the driver went to bed at 2030 MST and rose at 0630 MST after having a restful sleep. He was apparently in good spirits.

The driver was not wearing a seat-belt before the collision. Eyeglasses were found in the cab of the truck in proximity to the deceased.

1.13.2 Steering Axle Brakes

1.13.2.1 Federal Requirements

Many truck drivers believe that steering axle brakes on tractor trucks cause loss of steering control and semi-trailer jackknifing in heavy braking circumstances. Until 1992, Canadian manufacturing standards only stipulated that trucks be equipped with two separate independent braking systems and, since brakes on tandem rear axles could be configured to meet this requirement, front brakes were seldom installed at manufacture on tractor trucks.

On 07 May 1992, the Canadian manufacturing standards were changed to stipulate that all trucks be equipped with brakes on all wheels. Unlike U.S. standards which had similarly allowed vehicles without front brakes until 1987, at which time it was decreed that all commercial vehicles manufactured after 24 July 1980 must have brakes on all wheels, the Canadian requirement was not retroactive.

A U.S. National Transportation Safety Board Safety Study (NTSB/SS-92/01) adopted on 29 April 1992, covering heavy vehicle airbrake performance, concluded that lack of steering axle brakes reduced a vehicle's stopping capability and increased its susceptibility to jackknifing. It was also determined that the absence of brakes on the steering axle increased the likelihood of overworking the other brakes on a loaded truck. The NTSB stated that there were significant safety advantages in retrofitting pre-1980 tractors with steering axle brakes.

1.13.2.2 Provincial Requirements

The interpretation of the respective provincial motor vehicle safety standards vary little with respect to the issue of steering axle brakes. Except for the multi-trailer rigs, all are viewed to stipulate that steering axle brakes on trucks or tractor trucks are not mandatory if not factory-equipped. There is no requirement to meet the Canadian manufacturing standards at a change of ownership or mandatory periodic inspections if such inspections are a requirement. Four provinces, however, require steering axle brakes at a change of configuration (i.e., from a tractor truck to a truck). At the time of the accident, Alberta had not stipulated that this be done.

In all provinces, the inspections of trucks necessary for a change of ownership or certificate of roadworthiness do not involve the removal of tires and brake drums unless problems with brake components are suspected. Visual inspections of the internal brake components are accomplished through inspection ports. Such inspections usually focus on the amount of wear on brake shoes and do not provide the means for a thorough inspection of the other components.

1.13.3 The Automatic Signal Protection

An examination of the automatic warning devices following the removal of the damaged equipment determined that the automatic warning devices functioned as designed.

1.13.4 The Yard Assignment Crew

Although prohibited by company safety rules, the yard foreman and the yardman had located themselves on the platform area of the "A" end of the first rail car over the crossing so they could observe traffic and control their movement by radio communication with the locomotive engineer.

As they approached the insulated joint that activates the automatic warning devices, the yardman relayed the distance to the crossing to the locomotive engineer. The yard foreman could not see that the warning devices were activated but observed that the westbound vehicle traffic was stopped. When the rail car was approximately 10 feet from the roadway, the yard foreman gave the locomotive engineer the "all clear to enter the crossing." At this time, the yard foreman and the yardman advised that the

eastbound lanes were clear of traffic but then they saw a truck crest the 13th Street overpass. The speed of their movement increased as they continued over the crossing. When the truck was about 30 metres from the tracks, it had not slowed. The yardman did not hear anything to indicate that the truck was braking. Realizing that a collision was about to occur, he jumped off the rail car and ran ahead of the movement. The truck swerved and struck the leading end of the rail car. The yard foreman could not get off the rail car before it was struck, derailed and pushed into a building.

1.13.5 Witness Information

1.13.5.1 Lethbridge Police Constables

At 0917 MST on 30 March 1994, two City of Lethbridge police constables in separate vehicles were eastbound on the Crowsnest Trail. They were following the truck and travelling at about 75 km/h. When the speed zone changed from 80 to 70 km/h, one constable, travelling about 100 metres behind the truck in the outside lane, saw the railway movement approach the eastbound lanes. He noted that the automatic warning devices were activated and then noticed a swerving action of the truck and the absence of brake lights.

The other constable did not notice the automatic warning devices but, when the truck was about 30 metres from the crossing, he saw the yard movement moving past the median over the crossing at an apparent speed of 10 mph. He noticed that, when the truck was about 20 metres from the crossing, it swerved as the driver appeared to attempt to avert the collision.

The constables did not notice any significant reduction in the truck's speed as it approached the crossing.

The two constables saw a person jump from the end of the leading rail car before the collision. They indicated that there was a loud noise at impact and a large cloud of dust filled the air as the truck's load emptied onto the ground. They observed the back end of the truck bounce about two metres in the air and the railway car derail and collide with the northwest corner of the concrete block building.

The two constables stopped and, as they exited their vehicles, noticed that the flashing lights and the bell were operating. One constable radioed for additional police and ambulance assistance while the other constable answered a call for help from the yard foreman who was trapped by the debris of the building. They determined that the driver of the truck was deceased.

1.13.5.2 Other Motorists

An eastbound motorist had been following the police car and dump truck in the outside lane. He did not notice the automatic warning devices operating before he saw the yard movement start to come by the median onto the eastbound lanes. He reiterated the description of the actions of the truck before the collision as outlined by the police constables.

A westbound motorist observed the traffic slowing for the yard movement on the spur. All the highway traffic came to a stop. He indicated that there was little warning from the automatic warning devices before the hopper car entered the crossing at a slow speed.

Another westbound motorist did not notice the automatic warning devices operating, but he remembered a bell ringing as the yard movement occupied the crossing.

2.0 Analysis

2.1 Introduction

Although the train crew deviated from company instructions and CROR requirements before occupying the crossing, their actions are not considered to have caused or contributed to the accident. The mechanical condition of the truck was such that it could not be stopped; the investigation has surfaced concerns respecting the mechanical certification of the vehicle. It is also apparent that the configuration of the crossing poses a safety concern for both railway employees and motorists. The analysis will discuss all of these issues.

2.2 Consideration of the Facts

2.2.1 Train Operation

2.2.1.1 Company Instructions and CROR Requirements

In recognition of the difficulty in safely moving railway equipment onto a busy four-lane roadway, the railway required train crews to bring their movements to a stop before the road allowance. This requirement automatically invoked CROR Rule 103.1(d), providing that movements must allow the automatic warning devices to activate for at least 20 seconds before proceeding.

The intent of these requirements was to provide motorists with sufficient warning to bring their vehicles to a stop before the crossing. In the train crew's experience, such procedure proved ineffective in that motorists, on seeing the train stopped, would not obey the signals. It was then extremely difficult to encourage drivers to stop in order for the crew to move their train over the crossing. The train crews then evolved a system of slowing trains, engaging the locomotive bells and whistling, and, after activating the signals and observing that vehicles had stopped, proceeding onto the crossing without stopping. However, given the length of the circuits controlling the automatic warning devices, this procedure does not provide motorists in the lanes nearest the approaching trains with a sufficient amount of warning to bring their vehicles safely to a stop.

2.2.1.2 Crew Action

The yard movement stopped at a recorded distance of 1.465 miles and time of 0922:30 MST. Both are considered to represent the recorded time and position at impact. The stopping position placed the trailing end of the leading car at the southern edge of the eastbound lanes. Based on the length of the car (54 feet or 0.0102 miles) and the width of the eastbound lanes (60 feet or 0.0113 miles), a recorded distance of 1.444 miles with a recorded time of 0922:20 MST is calculated to be the recorded distance and time the railway car entered the eastbound lanes.

The automatic warning device circuit stretches 159 feet (0.030 miles) northward from the north edge of the eastbound lanes, representing a recorded distance of 1.414 miles, occurring at a recorded time of 0922:04 MST. The railway car, therefore, entered the eastbound lanes approximately 16 seconds after the activation of the automatic warning devices and was struck approximately 10 seconds later.

The north edge of the westbound lanes, 52 feet (0.01 miles) after the crossing circuit, would have been met at a recorded distance of 1.424 miles and recorded time of 0922:11 MST. Since whistling and bell ringing commenced at a recorded time of 0922:04 and the crossing circuit was activated at a recorded time of 0922:04 MST, the locomotive engineer provided westbound motorists with approximately

21 seconds of whistling and bell ringing and 7 seconds of automatic warning device activation before entering the crossing.

Although the train crew did not proceed into the crossing until traffic westbound was noticed to have stopped, their adopted procedure allows little time to judge motorists' intentions or initiate train braking. It is appreciated, however, that a longer time frame might encourage traffic not to stop or stop and proceed.

The eastbound motorists were provided with 16 seconds of advance warning from the automatic warning devices before their lanes were occupied. It is noted that, at allowable maximum highway speeds, the available sight-line (400 metres) is covered in 19 seconds and that, in the subject instance, the truck, travelling at 75 km/h, would have covered the distance in the same time. However, since the truck was first observed just as the lead railway car entered the westbound lanes, the advance warning signs would have been functioning before they were first visible to the truck driver. The actions of the crew, therefore, did not have an impact on the truck operation as the automatic warning devices had been activated for approximately 26 seconds before impact and were activated at the time the truck crested the 13th Street overpass. The available sight-line, however, does not allow for 20 seconds of warning for vehicles maintaining allowable maximum speed limits.

2.2.2 The Vehicle

2.2.2.1 Vehicle Operation

The vehicle operator had physical limitations accruing from heart disease and surgical intervention but had successfully met the provincial highway authority's medical conditions required to maintain his vehicle operator's licence. He was required to wear corrective lenses while driving and, at the time of the accident, was believed to have been fulfilling this requirement. He was apparently well rested and in good spirits.

He approached the accident location mindful of the speed limit and operating the truck in a normal fashion. The activated automatic warning devices were clearly visible. Closely following vehicles were easily brought to a stop. His attempt to avert the collision by steering to the front of the movement indicates that he was conscious and aware of the circumstances at that time. Neither driver inattentiveness nor incapacitation are therefore considered to have played a role in this accident.

The use of the available seat-belt would likely not have lessened the driver's injuries.

2.2.2.2 The Truck

The truck had only one operating brake which quickly faded under the load and left the driver with no means to stop his vehicle. No indication of a braking attempt would have been visible to other motorists with the inoperative brake light system.

2.2.2.3 The Certificate of Mechanical Fitness

At the time of the vehicle inspection, the truck was declared to be mechanically sound. The brake deficiencies evident after the accident were apparently the result of truck operation after the inspection or from adjustments made to the brakes by the owner. A thorough examination of the brake components, including the removal of the drums, would have, however, provided absolute verification of the mechanical fitness of the braking system.

The truck had never been equipped with steering axle brakes and same were therefore not necessary according to Alberta standards.

2.2.2.4 Steering Axle Brakes

The non-mandatory requirement for steering axle brakes allows trucks to operate legally on Canadian roadways with other than optimum braking ability and subsequent reduction in safety. Although it has been widely recognized that such brakes improve handling and braking activity and all trucks manufactured in Canada since 1992 have been required to be so-equipped, no move has been made by either federal or provincial bodies to deal with pre-1992 models. Although some jurisdictions have required that tractor trucks that have been converted to straight trucks have front brakes retrofitted, there is no apparent concern over this safety issue. Vehicle conversions or change in ownership would provide an opportune time to require such retrofits.

3.0 Conclusions

3.1 Findings

1. The train crew did not observe railway instructions to stop their movement at the stop sign nor the CROR requirement to wait 20 seconds before occupying the crossing.

2. The train crew's deviation from required railway practices had evolved as an effective means to move equipment over this crossing.

3. The automatic warning devices functioned as designed and provided adequate warning of the train`s approach to eastbound motorists.

4. Neither driver inattentiveness nor physical incapacitation or impairment caused or contributed to the accident.

5. Only one wheel of the truck had a functioning brake which quickly overheated and faded under load and could not provide the driver with a means to stop his vehicle before striking the train.

6. The mechanical inspection process does not require the removal of the brake drums to inspect internal components.

7. The vehicle was not equipped with steering axle brakes and same are not required by regulation.

8. Canadian manufacturing standards adopted in 1992 require that all commercial trucks be equipped with steering axle brakes, but no move has been made to require retroactive installation on older vehicles.

9. Change of ownership or conversion from tractor truck to straight truck configuration presents an opportunity to require a retrofit, which has not been exploited by most provincial jurisdictions.

3.2 Cause

The truck's braking system was severely compromised by mechanical deficiencies and the truck could not be stopped clear of the crossing.

4.0 Safety Action

4.1 Action Taken

The Province of Alberta has amended its provincial commercial vehicle inspection policy to require that tractor trucks manufactured before May 1992 without front brakes be fitted with front brakes meeting original equipment manufacturers' specifications, if the vehicle is converted for use as a straight truck.

4.2 Safety Concern

The Board understands that, until 1992, tractor trucks could be manufactured without brakes on the steering axle as a means of reducing the risk of jackknifing. However, since 1992, Canadian manufacturing standards require brakes on the wheels of steering axles. Apparently, the benefits of the added braking action outweigh other risks of having brakes on the steering axles.

The Transportation Safety Board's mandate does not specifically include the investigation of highway traffic accidents, unless the highway vehicle is involved in an accident with a train under federal jurisdiction. This occurrence demonstrates the risks to rail operations when vehicles with inadequate braking systems approach railway crossings.

Although highway safety is essentially a provincial matter, the federal government does have some jurisdiction for the establishment of national standards. The federal *Motor Vehicle Safety Act* establishes regulations for the "manufacture and importation of motor vehicles and motor vehicle equipment to reduce the risk of death, injury and damage to property and the environment." However, it provides no authority to require truck vehicle manufacturers or truck owners to retrofit equipment nor does it provide means to direct provincial authorities to order such action. Although Transport Canada does have a mandate to attend to the development and operation of a safe national transportation system, provincial governments have authority over the regulations governing highway vehicle maintenance and operations.

In the light of the mixed federal and provincial responsibilities for establishing and implementing standards for road safety, the Board is concerned that tractor trucks manufactured before May 1992 may continue to be operating in some provinces without brakes on the steering axles, thus creating a potential threat to rail safety.

Specifically, the Board is concerned that some provinces have not yet taken action similar to that of the Province of Alberta to address the potential hazard resulting from tractor trucks using provincial highways with insufficient braking capacity.

This report concludes the Transportation Safety Board's investigation into this occurrence. Consequently, the Board, consisting of Chairperson, John W. Stants, and members Zita Brunet and Hugh MacNeil, authorized the release of this report on 21 September 1995.

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