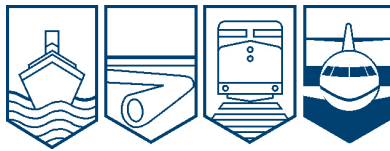


Transportation Safety Board
of Canada



Bureau de la sécurité des transports
du Canada

**RAILWAY INVESTIGATION REPORT
R12E0182**



CONTRACTOR EMPLOYEE INJURY

**CANADIAN NATIONAL
TRAIN Q-19051-24
MILE 259.20, WAINWRIGHT SUBDIVISION
CLOVER BAR, ALBERTA
26 DECEMBER 2012**

Canada

The Transportation Safety Board of Canada (TSB) investigated this occurrence for the purpose of advancing transportation safety. It is not the function of the Board to assign fault or determine civil or criminal liability.

Railway Investigation Report R12E0182

Contractor employee injury

Canadian National
Train Q-19051-24
Mile 259.20, Wainwright Subdivision
Clover Bar, Alberta
26 December 2012

Summary

At approximately 0909 Mountain Standard Time on 26 December 2012, Canadian National freight train Q-19051-24 was proceeding eastward from Edmonton, Alberta, to Wainwright, Alberta, when it struck 3 A&B Rail Services Limited employees at approximately Mile 259.20 of Canadian National's Wainwright Subdivision, near Clover Bar Yard. The 3 employees, who were performing snow-clearing activities near a switch, were admitted to hospital; 2 of them were seriously injured.

Ce rapport est également disponible en français.

Factual information

At approximately 0830¹ on 26 December 2012, eastbound Canadian National (CN) freight train Q-19051-24 (train 190) departed Edmonton, Alberta, destined for Wainwright, Saskatchewan. The train was comprised of 2 locomotives and 173 loaded cars. It weighed 10 388 tons and was 11 027 feet long. Train 190 was operated by a locomotive engineer and a conductor. Both crew members were qualified for their respective positions, were familiar with the territory, and met company and regulatory fitness and rest standards.

At approximately 0909, while travelling at 27 mph on the main track of the Wainwright Subdivision through Clover Bar in Edmonton (Figure 1), train 190, with a clear² signal, rounded a 2° right-hand curve (Photo 1). About 1350 feet ahead, the crew noticed 3 track maintainers (a foreman and 2 track workers) working on the main track just beyond the public crossing at Mile 259.21 (Photo 2 and Figure 2). The 2 track workers were wearing portable gas-powered backpack blowers. Train 190's bell and horn were sounded as per Rules 14(l) and 14(f)³ of the *Canadian Rail Operating Rules* (CROR). In the absence of noticeable reaction from the track maintainers, the train crew initiated an emergency train brake application.

Approximately 2 seconds before the train reached the work location, the foreman, who was standing between the rails facing east and holding the safety tag lines⁴ tethered to the backpack blowers, glanced behind and noticed the approaching train. While attempting to jump to the north of the track, the foreman was struck by the train, which had slowed to 25 mph. Unaware of the train's approach, the 2 track workers who were operating the portable backpack blowers were also struck by the train. Track worker no. 1 was briefly dragged by the lead locomotive as the worker's tag line became entangled with the locomotive. The tag line eventually broke free from the locomotive, and track worker no. 1 came to rest north of the main track. Track worker no. 2 was dragged approximately 163 feet under the right front side of the lead locomotive. All 3 track maintainers were injured.

The lead locomotive of train 190 came to a stop approximately 510 feet east of the accident location. The train crew made an emergency radio call to advise the rail traffic controller (RTC) of the accident and to request emergency medical assistance. The 3 track maintainers were transported to hospital.

The track maintainers were employed by A&B Rail Services Limited (A&B), which was under contract with CN. A&B is an independent contracting company that provides track maintenance services to railways. On 18 December 2012, A&B was contracted at CN's Walker

¹ All times are Mountain Standard Time.

² A green-over-red signal, meaning proceed at track speed.

³ Rule 14(l) (Engine Whistle Signals) of the *Canadian Rail Operating Rules* (CROR) requires the whistle to be sounded (i.e., long, long, short, long) at public crossings at grade, from the whistle post until the crossing is fully occupied. For trains travelling less than 44 mph, the whistle signal must be sounded to provide a minimum of 20 seconds of warning. Rule 14(f) requires the sounding of a succession of short sounds as an alarm to persons or animals on or near the track.

⁴ The tag line is a nylon rope attached to the back of a portable blower. The line is held by another track worker, who pulls on it to warn the worker wearing the backpack blower to clear the track if there is an approaching movement.

Yard for snow removal and emergency track-repair service. Two of the A&B employees involved in this accident had been working in Walker Yard since December 21.



Figure 1. Location of the accident (source: Railway Association of Canada, *Canadian Railway Atlas*)



Photo 1. Sightline looking west from the accident site (Arrow shows the approximate area where the track workers were standing.)



Photo 2. Accident site facing east, showing the track workers' approximate positioning (i.e., with their backs to the approaching train)

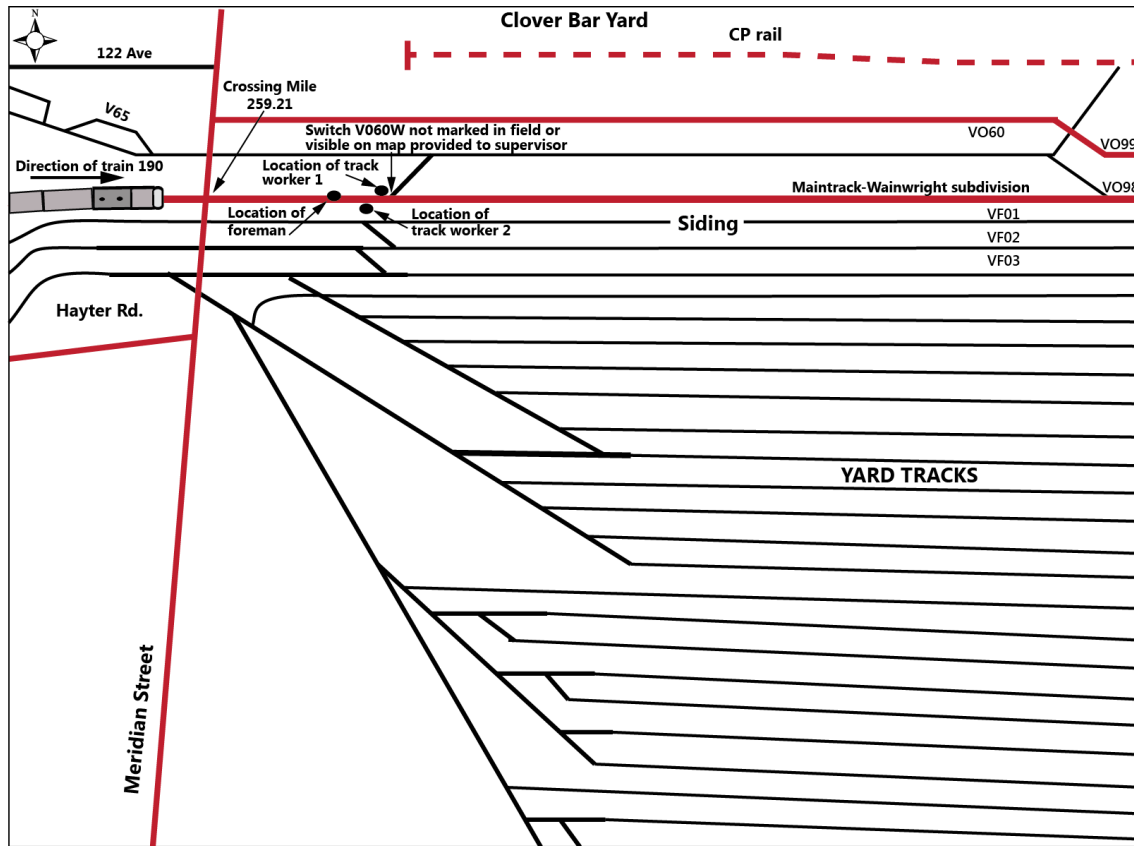


Figure 2. Location of workers at accident site

At 0730 (i.e., the beginning of the shift) on December 26, an A&B supervisor met with CN managers at CN's Edmonton Yard office to discuss the day's work. The A&B supervisor was instructed to assist the snow jet⁵ with cleaning switches in the Clover Bar Yard area. No other A&B employees were in attendance at the meeting with CN. The A&B supervisor copied the work details onto an A&B job briefing Form. Outlined below are omissions and inaccuracies that were found in the form:

- The yard mileages to work between were not included.
- The work location, specific tracks, and specific switches were not listed.
- The radio channel to be monitored was incorrect.
- The designated safety watch person was not specified.
- The location where the safety watch person was to be positioned was not specified.
- The method of warning to be used on the approach of a train was not specified.
- The use of gas-powered backpack snow blowers was not indicated.
- The maximum speed of train movements was incorrect.
- The sightline distance at the work site was incorrect.
- The location where tools were to be cleared was not established.

⁵ A snow jet is a large piece of railway equipment that uses forced air produced by a jet engine to remove snow from track switches.

- The designation of who would clear tools was not established.
- The signatures of all employees involved were not obtained.

The CN Managers did not review the information copied onto the job briefing form by the A&B Supervisor, nor were they required to do so.

Before the start of the track work, the track supervisor disseminated details of the work to the 3 A&B track maintainers who were to perform the work. Two of the 3 track maintainers wrote the information onto a separate A&B Job Briefing Form. It was indicated on the job briefing form that the work was to be protected by use of a safety watch procedure.⁶

During the week preceding the accident, 2 of the 3 A&B track maintainers had been assigned to remove snow at 3 other CN yards in the Edmonton area. This previous work had been performed under safety watch protection, and often while using backpack blowers. The A&B track maintainers had been accompanied by an in-charge CN employee, who would usually obtain train information from the yardmaster before work proceeded on any yard tracks. A written maintenance protect authority⁷ from the yardmaster had normally been used to provide additional protection on non-main track.

At the time of the accident, there was no CN employee accompanying the A&B track maintainers, and no additional protection (e.g., maintenance protect authority) had been obtained for the snow-blowing activities at Clover Bar. The CN employees were enroute to the east end of the yard with the snow jet. The A&B track maintainers were provided with the Clover Bar evacuation map (Figure 3). As the A&B employees were not familiar with the territory, they had some difficulty locating the specific switches that they were instructed to clean. Further conversation between the A&B supervisor and CN managers determined that those switches had already been cleaned, so the A&B track maintainers were redirected to start clearing switches eastward from the nearest switch encountered until they met up with the snow jet.

The A&B track maintainers inadvertently started at a main track switch⁸ (VC60W) that was listed on the Clover Bar Yard map but had not been stenciled with a number in the field. The track maintainers were unaware that they were working on the main track; they believed they were working on a yard track. Their job briefing indicated that the maximum speed of train movements was 25 mph. The maximum speed on tracks other than the main track on CN (unless otherwise specified) is 15 mph.

⁶ A safety watch procedure is a form of protection for on-track activities, such as inspections and minor repairs, that do not require positive protection from the rail traffic controller.

⁷ A maintenance protect authority contains an authority number, the name of the employee requesting the protection, the designation of track to be protected, specific locations, the amount of time required, a completion time, and the initials of the employee issuing the protection. Both parties must be involved in the written cancellation of this authorization.

⁸ Main track hand-operated switches are equipped with locks and targets that display green when lined for the through route, and red when lined for the diverging route. Non-main track hand-operated switches are not usually equipped with locks unless the railway desires them to be left lined and locked in the normal position when not in use. Non-main track switches are equipped with targets that display green for the through route and yellow for the diverging route.

While the track maintainers were clearing snow at switch VC60W, the A&B supervisor returned to a truck to follow up on other operational activities. The truck had a radio, and one of the track maintainers was wearing a radio and speaker affixed to one coat shoulder. Consequently, the track maintainers believed that the A&B supervisor was providing additional track protection, as the supervisor would be able to alert them of any approaching trains. However, the A&B supervisor did not believe that he was providing track protection to the track maintainers. Believing they were working on non-main track, the supervisor and track maintainers were monitoring the engineering channel rather than the mainline train standby channel.

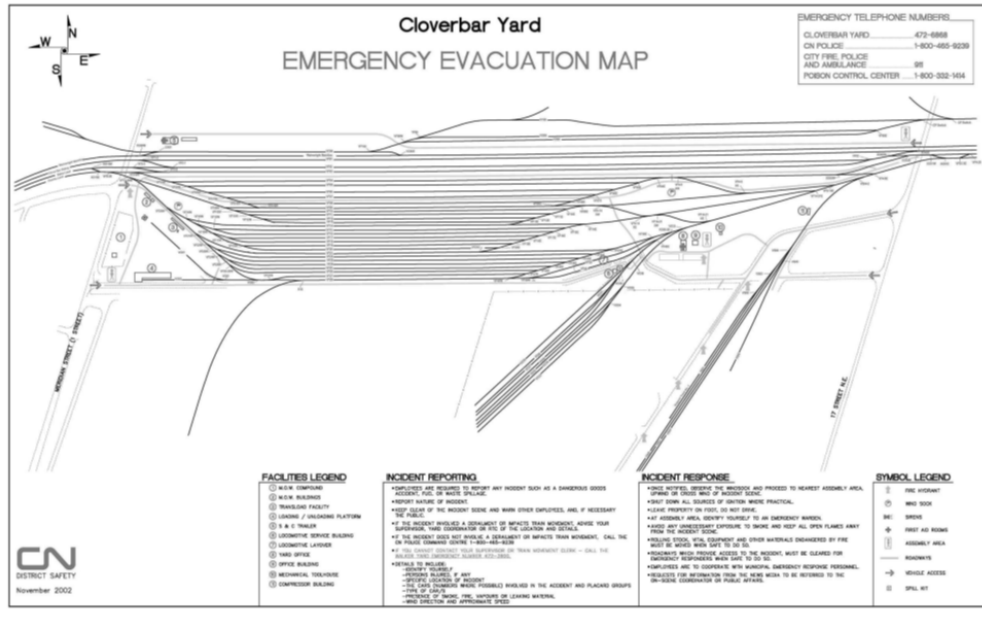


Figure 3. Clover Bar evacuation map (Note: Given its size, switch numbers and track numbers were difficult to read on the map; see Appendix A for the actual size of the map provided to A&B employees.)

At the time of the occurrence, the weather was -21°C (about -30°C with the wind chill), with moderate eastward winds of approximately 13 km/h. Visibility was clear.

Subdivision and track information

The Wainwright Subdivision, extending from Mile 0 (Biggar, Saskatchewan) to Mile 264.7 (North Edmonton), is part of CN's east/west corridor for passenger and freight traffic through Saskatchewan and Alberta. In the vicinity of the accident, the maximum permissible speed is 40 mph for freight trains and 45 mph for passenger trains. Train movements on the Wainwright Subdivision are controlled by the Centralized Traffic Control System (CTC), as authorized by the CROR and supervised by an RTC located in Edmonton.

The track at the accident location consisted of 136-pound continuous welded rail, which was laid on 14-inch double-shouldered tie plates, fastened onto hardwood and softwood ties with spikes, and anchored every second tie. The cribs were full, and the ties and ballast were in good condition.

Meridian Street public crossing (Mile 259.21) is situated about 50 feet west of the accident site. The crossing protection system consisted of lights, bells, and gates, and was determined to be in serviceable condition. Data acquired from the crossing protection system indicated that the system activated and provided the requisite automated warning as train 190 approached the crossing.

Protection of track work

Under the CROR, the term “track work” is defined as:

Any work on or near the track that may render the track unsafe for movements at normal speed or where protection against movements may be required for employees and machines involved in track construction and repairs.

The term “employee” is given the following definition:

A person qualified to regulatory and company standards employed by the company. Applies to contract employees and employees of other companies and railways operating and/or performing other rules related duties on the host railway trackage.

Rule 840.1 (Protection of Track Work on Non-main Track) of the CROR states (in part):

Before starting any track work on a yard track, the employee (if any) responsible for the yard tracks, must be advised.

Before any track work is started, the foreman will provide protection as follows:

- (i) each switch must be locked with a special lock in the position which will prevent a movement from operating on the portion of track where work is to be performed; or
- (ii) place a red flag by day, and in addition, a red light by night, or when day signals cannot be plainly seen, between the rails in each direction from the working point. When practicable such signals must be placed at least 100 yards from the working point and where there will be a clear view of them from an approaching movement of 300 yards if possible[...]

On the day of the accident, Rule 840.1 was not applied by the track maintainers. The local practice was to use safety watch protection and for a CN employee to accompany the contractors after obtaining a maintenance protect authority from the yardmaster.

Track personnel and Canadian Rail Operating Rules qualifications

CROR General Rule A states (in part):

Every employee in any service connected with movements, handling of main track switches and protection of track work shall [...]:

- (i) be subject to and conversant with these rules, special instructions and general operating instructions;

- (ii) have a copy of this rule book, the general operating instructions, current time table and any supplements, and other documents specified by the company accessible while on duty;
- [...]
- (vi) be conversant with and governed by every safety rule and instruction of the company pertaining to their occupation;
- (vii) pass the required examination at prescribed intervals, not to exceed three years, and carry while on duty, a valid certificate of rules qualification;
- [...]
- (x) when reporting for duty, be fit, rested and familiar with their duties and territory over which they operate [...]

For track personnel, CROR recertification is required every 3 years. A 2-day refresher training session is provided, and the exam is performed on-line.

At CN, only one person in the group is required to be qualified in the CROR as long as the other track workers are not handling main track switches. For contract work, CN allows the contracted company to determine whether other track workers need to be CROR qualified. On 26 March 2012, the A&B foreman had attended and passed a CN CROR course. On 28 February 2011, the A&B supervisor had attended and passed a CN CROR course. The qualifications of one of the A&B track maintainers had expired. The other A&B track maintainer was not CROR qualified.

Transport Canada has indicated that activities on the track necessitating the protection of employees constitutes track work, and that contract employees and employees of other companies are required to be CROR qualified.

Safety Watch protection at Canadian National

In the 1990's, safety watch protection emerged as a form of track worker protection on North American railways. As a procedure, it was designed to improve track worker productivity, especially at locations with increased traffic and reduced track time. The use of safety watch protection was originally introduced for single-track territory. The practice was eventually adapted and implemented for multi-track territory.

In 2001, when CN adopted the use of this track worker protection, written guidelines were established within CN's General Engineering Instructions (GEI). These guidelines were revised in 2006 and in 2009.

CN GEI Section 3.1, Forms of Protection, states (in part):

All Engineering employees required to foul or occupy tracks must be protected by one of the following means:

- Positive protection as per the CROR
- Safety Watch
- Lone Worker

CN GEI Section 5.0 and 5.3 states (in part):

5.0 Safety Watch

5.1 Work that is performed on or about the track that does not require positive protection as provided by the Canadian Rail Operating Rules (CROR) may be performed with a Safety Watch. The sole duty of the Safety Watch is to protect working personnel through the observance of all train and track unit movements and hazards from all directions. The Safety Watch must dedicate their entire attention to this task and never engage in other activities, which could detract them from this primary responsibility to protect others.

[...]

5.3 The Safety Watch must always remain in a position to immediately warn by physical means those employees they are protecting of any approaching rail traffic.

In December 2011, CN issued clarifications to these guidelines, specifying that snow removal can be conducted under safety watch protection using backpack blowers on track where the speed is restricted to 15 mph. In such circumstances, the safety watch person must use tag lines to provide physical warning of approaching movements.

Canadian National training on Safety Watch

As part of CN's CROR refresher training, safety watch protection was presented as part of the engineering workbook.⁹ Within this training module, the following question was asked:

May ALL track work be performed solely under the protection of a Safety Watch?

From the facilitator's training guide, the correct answer was:

No. Positive protection is available for any track work requirement and Safety Watch on its own should only be used when the work to be performed does not render the track unsafe and employees and equipment can be immediately advised of and clear approaching trains.

There was no other mention of safety watch protection within the training material.

A 1993 video (*Funeral for a Friend*) that highlights a number of fatalities involving engineering services¹⁰ (ES) employees on CN tracks was also used as a training aid. The video indicates that, in each case, proper track protection was not obtained. Safety watch protection is also discussed

⁹ The engineering workbook (dated June 2008) refers to CROR refresher material (presented by a facilitator) that provides review and practice questions concerning rules predominantly used by engineering employees.

¹⁰ Engineering services employees include railway track maintenance workers and signal and communications workers.

as an approved form of track protection. The example provided involves use of loud machinery on track, with the safety watch employee wearing hearing protection.

A&B had been working on CN property since May 2012, about 7 months before receiving the 2011 GEI updates. On 01 November 2012, CN provided A&B with a copy of the 2011 GEI clarifications and the safety watch exam. CN indicated that any employees trained in the previous GEI version must be retrained with the current version. CN relied on A&B to provide this training to its employees. In addition, training attendance records were to be forwarded to CN. None of the A&B employees involved in this accident had been trained or tested on the 2011 GEI clarifications. A&B did not interpret receipt of the 2011 GEI clarifications from CN as a clear notice of a substantive change, and as a consequence, the material was not circulated internally. These employees were not aware of the GEI clarifications, including the requirements for safety watch protection while using backpack blowers (Appendix B). There is no regulatory requirement for GEI training or testing.

Through general discussion with 3 other contracting companies that provided track maintenance services to CN, it was determined that before this accident:

- none of the contracting companies had been given the 2011 GEI clarifications, which include a list describing work activities for which safety watch protection can be used and the restrictions (where applicable);
- none of the employees from the contracting companies had taken the safety watch exam to ensure they understood the 2011 GEI clarifications involving safety watch procedures;
- knowledge of safety watch procedures for the contract track workers was normally acquired on the job; and
- there were different interpretations among the contract track workers of the rules regarding how long they must be in the clear before the arrival of an approaching train at the work site.

Railway requirements for job briefing

Section 2.1 of CN's GEI states (in part):

Prior to commencing any work, and as conditions or circumstances or the method of protection is changed, extended or about to be released, the person in charge of a work group will hold a Job Briefing session for all persons engaged in the activity. Both employees and non-employees (contractors, etc.) must be included.

Section 2.2 of CN's GEI states (in part):

The Job Briefing session shall cover all relevant issues with respect to the tasks being performed and necessary safety precautions that must be taken, including, but not limited to the following:

- Designation of the employee in charge,
- Method of on-track protection being used and the limits of authority,
- Track(s) that may be fouled,

- Operational control of movements on adjacent tracks, if any,
- Procedure to arrange for protection on adjacent tracks, if necessary,
- Means of providing a warning when Safety Watch is used,
- Designated place of safety where workers will clear for trains or track units,
- Designated work zones around track units, and
- Safety working and travelling distances between track units.

Section 2.3 of CN's GEI states (in part):

At the conclusion of the Job Briefing, all employees shall confirm understanding. Job Briefing information shall be kept in writing, in prescribed Job Briefing books, for ready reference by each employee.

With respect to job briefing requirements when safety watch protection is used, the 2011 GEI clarifications state (in part):

Prior to implementing Safety Watch protection, the person in charge, the Safety Watch and the employee(s) being protected must conduct a thorough Job Briefing to ensure that at a minimum the following items are covered and there is a clear understanding of:

- who is the designated Safety Watch;
- where the Safety Watch will be positioned;
- what work is to be performed;
- how the work is to be performed;
- if additional clearing time is required;
- the maximum speed of trains on that track and required sightline distance;
- the sightline distances at the work site;
- where the workers will clear on the approach of rail traffic;
- how the warning is to be given;
- where any tools are to be placed when clearing;
- who will clear the tools; and
- other risks at the work site.

This information must be documented (in writing) in the Job Briefing.

In addition to the 2011 GEI clarifications for safety watch procedures, a more current CN job aid ¹¹ form was created for use during a job briefing. The form requires a field-level risk assessment to be performed when blowing snow with a motorized backpack blower while working under safety watch protection (Appendix C). The A&B supervisor was aware of the revised CN job aid and its contents.

¹¹ A job aid is a document developed for training and reference purposes to describe the recommended application of a rule or procedure.

Safety watch is a permitted form of track worker protection for use with some tasks that may reduce the track worker's ability to hear approaching trains (e.g., snow removal with motorized backpack blowers). However, in such cases, workers are not permitted to work on track where the maximum train speed exceeds 15 mph. In addition, the workers are required to use tag lines that can be tugged by the person providing safety watch protection when there is an approaching train.

Train horn audibility

Qualification testing conducted by CN in 2005 on its GM SD70M-2 locomotives (i.e., the same type of locomotive as the lead locomotive on train 190) determined that the model of horn applied as standard equipment on these locomotives¹² met regulatory requirements.

Railway and regulatory requirements for worker safety

As part of its safety management system (SMS), CN conducts performance measurement of rules compliance (PMRC) to evaluate the extent to which employees comply with rules, regulations, standards, and other procedures. These tests are documented, and misapplications of rules/procedures are addressed. Job briefing and safety watch procedures are within the scope of CN's PMRC tests. Company records indicate that, in the preceding year, worker safety procedures had been followed correctly by its employees.

A number of CN PMRC tests had also been conducted in the same time frame on A&B employees. One of the A&B employees involved in this accident was tested and did not have the required (i.e., up-to-date) railway timetable. The specific test did not establish whether this employee had the latest version of CN's GEI.

Transport Canada (TC) monitors and audits railways and their employees with respect to compliance with rules, regulations, and standards. However, as safety watch protection is a company-initiated procedure, TC has not specifically audited this type of track worker protection. TC considers it to be the company's responsibility to ensure that its employees comply with this procedure. Within Alberta, between July 2011 and December 2012, there had not been any regulatory or audit inspections concerning the use of safety watch protection by contractors working on CN property.

Track worker protection on other Canadian railways

Canadian Pacific's (CP) Lookout Warning Policy (Appendix D) is similar to CN's safety watch practice. CP's policy specifies (in part) that lookouts must have a valid certificate of rules qualification at the "D" level as a minimum.

For track owned by VIA Rail Canada Inc. (VIA), the safety watch procedure is not permitted on main track territory if the authorized train speed is greater than 15 mph.

¹² Nathan K5LLAR1L 5-chime air horn on the 8910

Track worker protection on United States railroads

In the United States, track worker protection procedures are included in section 214.329 of the *Code of Federal Regulations* (Title 49, Volume 4, revised 01 October 2003), which states (in part):

Roadway workers in a roadway work group who foul any track outside of working limits shall be given warning of approaching trains by one or more watchmen/lookouts in accordance with the following provisions:

(f) Every roadway worker who is assigned the duties of a watchman/lookout shall first be trained, qualified and designated in writing by the employer to do so in accordance with the provisions of section 214.349.

Section 214.349 of the *Code of Federal Regulations* states (in part):

a) The training and qualification for roadway workers assigned the duties of watchmen/lookout shall include, as a minimum, consideration of the following factors:

- 1) Detection and recognition of approaching trains.
- 2) Effective warning of roadway workers of the approach of trains.
- 3) Determination of the distance along the track at which trains must be visible in order to provide the prescribed warning time.
- 4) Rules and procedures of the railroad to be used for train approach warning.

Other related occurrences

Transportation Safety Board Rail Occurrence R07D0033

On 19 April 2007, a railway signal maintainer was struck and fatally injured by a freight train at Mile 52.8 of the CN Kingston Subdivision near Regis, Ontario. The signal maintainer was spray-painting a switch machine under lone worker protection.

Following the accident, a lone worker job aid was developed and distributed to CN ES employees. The job aid included a form (Statement of On-track Safety) that provides a chart indicating the minimum required sightline distances associated with authorized track speed. The form must be completed by each employee before using lone worker protection and must be in the employee's possession while work is being performed.

Transportation Safety Board Rail Investigation R11T0161

On 14 July 2011, at approximately 1306, VIA passenger train 051 (VIA 51) was proceeding westward at 96 mph on the south track of the Kingston Subdivision. Near Mile 314.4, the crew noticed 2 CN ES employees working on the north track. VIA 51's bell and horn were sounded while approaching the work location. With no immediate reaction from the track workers, the crew applied the emergency train brake. Approximately 6 seconds before the train reached the work location, one track worker moved north to clear the track and shouted to the co-worker to clear the track. The other track worker attempted to exit to the south and was struck and fatally

injured by the train. The track workers had been using the safety watch procedure for protection.

Following the accident, the TSB issued Rail Safety Advisory (RSA) 09/11 (Use of Lone Worker and Safety Watch Protection on High Speed Railway Corridors) to TC. The advisory explained the potential for misinterpretation of CN's GEI regarding track worker protection. The letter also stated that given the importance of workplace safety for track maintenance personnel on high-speed railway corridors, TC may wish to review the manner in which federally regulated railways implement, monitor, and conduct training for lone worker and safety watch protection to ensure that the criteria are properly applied and that adequate protection is provided to track maintenance personnel. TC indicated that it was considering the possibility of encouraging the railways to develop new rules and/or amend older ones to incorporate these company instructions into a more formal regulatory framework.

As reported in TSB Railway Investigation Report R11T0161:

On 19 July 2011, CN Supervisors and Health and Safety Representatives were advised of the rescinding of Safety Watch and Lone Worker protection on the Kingston Subdivision.

On 03 August 2011, CN issued a Safety Flash to ES [engineering services] employees reiterating the requirements to properly apply Safety Watch.

CN's ES reviewed the Safety Watch procedure and implemented the following improvements:

- enhanced the sight line distance / time chart to include the time employees need to clear the track,
- developed a list of activities that could be performed under Safety Watch protection, and
- developed a Safety Watch job aid and training course for all engineering employees.¹³

On 28 November 2011, Human Resources and Skills Development Canada (HRSDC) issued 3 directions. These directions and CN's responses to them, are described in TSB Railway Investigation Report R11T0161 as follows:

- The Preventative Measure Direction called for, in part: To the extent that the employer controls the activity, develop, implement and monitor, in consultation with the appropriate committee or, health and safety representative:
 - a prescribed program for the prevention of hazards in the work place,
 - provide for the education of employees in health and safety matters,

- take preventive measures to address hazard of moving trains within areas of track that the employer knows would be unsafe to use Safety Watch i.e. sharp bends in the track, and
- first try to eliminate the hazard.
- The Hazard Elimination Direction requested the identification of areas where safety watch would be prohibited as a method of track protection.
- The Lack of Supervision Direction stated in part that: The employer has failed to:
 - take preventative measures to address assessed hazards,
 - manage/supervise their employees' work methods, to ensure that work being completed is done so in accordance with CN's safety protocol.

CN was directed to address the above three contraventions no later than 5 January 2012.

[...]

On 21 December 2011, CN responded to HRSDC's Preventative Measures Direction indicating that a rigorous "Safety Watch" training initiative had been implemented. [...]

CN's response to HRSDC's Hazard Elimination Direction indicated that safety watch protection, as a method of protection on all class 5 double-track territory including the Kingston, Oakville and portions of the St-Hyacinthe subdivisions remains suspended. Safety watch on all other tracks is governed by the more stringent general operating instructions.

CN's response to HRSDC's Lack of Supervision Direction indicated that CN's System Management Safety Plan includes the Performance Management Rules Compliance program that involves supervisors monitoring employees and contractors while they work, assessing their performance with regard to process, procedures, method of protection, PPE [*personal protection equipment*], etc. Safety watch protection processes across the system underwent 2504 observations, with a compliance rate of 98%. Of the failures, 17% of the employees were formally investigated and received between 10 and 30 demerit points through the discipline system. The balance of the employees that were non-compliant were addressed at the time of the observance by the supervisor who reviewed the intent of the Safety Watch process and the application of the parameters. Once the process is confirmed to be understood by the employee or contractor, the supervisor authorizes resumption of work and records this action in the *PMRC* [*performance measurement of rules compliance*] database.

The actions taken by CN met the requirements of [*the 3*] HRSDC Directions. ¹⁴

¹⁴ Ibid.

Analysis

There were no track, equipment, or train handling anomalies noted that may have contributed to the accident. This analysis will focus on the interactions between the railway and A&B Rail Services Limited (A&B), the training of third-party contractor employees, the safety watch procedures, the job briefing, and oversight of railway general engineering instructions (GEI).

The accident

As eastbound train 190 traversed the 2° right-hand curve on the main track approaching Mile 259.21, the train crew observed 3 track maintainers positioned between the rails. The track maintainers were all facing east with their backs to the train, and were occupied with clearing snow from the switch. When the track maintainers did not respond to the locomotive horn, the train brakes were placed into emergency. The train was unable to stop before striking the track maintainers, who all sustained serious injuries. With their backs to the approaching train and the audible warning of the locomotive horn attenuated by the noise from the backpack blowers, the 3 track maintainers did not become aware of the approaching train in time to safely clear the track.

Of the 3 track maintainers, the only person who was rules qualified was the one holding the tether lines. However, that track maintainer did not believe that he was the designated safety watch person.

None of the track maintainers were aware that they were working on the main track. In addition, none of the track maintainers were aware that safety watch protection was not a permitted form of track protection when performing this type of work (i.e., blowing snow using motorized backpack blowers) on a main track. At the time of the occurrence, the A&B supervisor, whom the track maintainers believed to be the designated safety watch person, was following up with other operational duties and was not directly overseeing the work at the switch. The supervisor and one of the track maintainers each had access to two-way radio. However, they were not monitoring the mainline standby channel, as they were supposed to be working on non-main track. Additionally, the noise of the backpack blowers would likely have rendered any broadcast to the track maintainer inaudible.

The A&B employees had not been trained or tested on the Canadian National (CN) GEI clarifications regarding safety watch procedures, which included a specific restriction on the use of backpack blowers at locations where the maximum track speed exceeded 15 mph. In the absence of up-to-date training, the 3 A&B track maintainers were performing track work activities that were not permitted under safety watch protection and without appropriate track protection.

Train crew actions

The train was travelling at 27 mph just west of the whistle post for the crossing at Mile 259.21 when the track maintainers first came into view. As it is not uncommon for train crews to encounter track maintainers on the track, the normal course of action is to sound the locomotive

horn, as was done in this case. The train crew anticipated that the track maintainers would react and clear the track. When the track maintainers did not react, the crew placed the train brakes in emergency (at about 1110 feet from the track workers). The train was travelling at about 25 mph when it struck the 3 track maintainers. The train crew's actions were appropriate to the circumstances they encountered and were not considered causal to the accident.

Worker safety for contract employees at Canadian National

Transport Canada's (TC's) safety management system (SMS) regulations make specific reference to the responsibility of railways with regard to the safety of third parties working on their property. Specifically, it is the obligation of the railway to ensure that its employees and any other persons to whom they grant access to its property have appropriate skills and training and have adequate supervision to ensure that they comply with all safety requirements. In this occurrence, it was determined that:

- the December 2011 clarification to CN's GEI regarding safety watch procedures was not disseminated to A&B management until 01 November 2012;
- the A&B supervisor and track workers were not aware of the recent clarifications to CN's GEI regarding the application of safety watch procedures;
- the job briefing was conducted between CN and the A&B supervisor, without the participation of the A&B track maintainers who were going to perform the work;
- the completed A&B job briefing form was missing a number of important pieces of information (i.e., information that was required on the revised CN job briefing form);
- the CN managers did not review, nor are they required to review, what was copied on the job briefing form;
- the employees involved in the accident did not have a common understanding of the manner in which the track work was to be protected;
- neither the A&B supervisor nor the A&B track maintainers were sufficiently familiar with the territory (e.g., track layout in the vicinity of the accident); and
- at the time of the accident, there was no direct oversight/guidance being provided by CN to the A&B work crew.

Railway property is a potentially dangerous work environment for individuals who have not been properly trained. For this reason, railways invest heavily in the training of their employees and devote significant resources to promoting employee safety. Subsequent to the Durham Junction accident (TSB Rail Investigation Report R11T0161), CN made numerous improvements to its safety watch and job briefing procedures. Despite the railway's obligation to ensure that others who are granted access to railway property are properly trained and supervised, and despite A&B's obligation to protect the health and safety of its employees and ensure that its employees are properly trained, the A&B track employees had not been fully trained in safe railway working practices. They were not being directly supervised, and had not been made aware of the changes to the safety watch procedures that had been made after the Durham Junction accident.

Qualification of track workers

Canadian Rail Operating Rules (CROR) training provides information to track workers about how to differentiate between main track switches and non-main track switches, even when unfamiliar with the territory (e.g., switch target colour and switch locks). CN requires that only one person in the group be qualified in the CROR as long as the other track workers are not handling the main track switches. In contrast, Canadian Pacific requires that all track workers be CROR qualified. CN considers it to be up to the contracted company to determine whether other track workers must be qualified. TC has indicated that activities on the track necessitating the protection of employees constitutes track work, and that contract employees and employees of other companies are required to be CROR qualified.

In this occurrence, only 1 of the 3 A&B track workers was CROR qualified. If CROR training is not provided to all track workers, there is an increased risk that track work will be conducted without adequate protection.

Job briefing forms

Despite the availability of a more comprehensive CN job briefing form, the A&B supervisor recorded the specific details of the job onto an A&B job briefing form. The A&B track maintainers had not been invited to the job briefing. The CN managers at the job briefing were not made aware of the information that the A&B supervisor recorded. The job briefing form prepared by the supervisor contained a number of inaccuracies and omissions, which were consequently relayed during the job brief between the A&B supervisor and the A&B track workers. These deficiencies may have been identified and corrected if the other A&B employees had been present at the briefing. If all employees whose safety is affected do not take part in comprehensive job briefings, track workers may not protect themselves from the risks inherent in the job tasks.

Oversight of railway general engineering instructions

In Canada, the safety watch procedure is established by industry instructions and does not form part of a regulation. Consequently, TC does not specifically oversee employee compliance and management oversight of such procedures. Other jurisdictions (e.g., United States) have taken the initiative to regulate similar methods of track protection.

Subsequent to the Durham Junction accident in July 2011 (TSB Rail Investigation Report R11T0161), Transport Canada indicated that it was considering incorporating safety watch protection into a more formal regulatory framework. However, this incorporation has not happened. If safety watch-type procedures for track worker protection are not regulated, there is an increased risk that these procedures will not be applied and supervised on a consistent basis across railways and contracting companies.

Findings

Findings as to causes and contributing factors

1. With their backs to the approaching train and the audible warning of the locomotive horn attenuated by the noise from the backpack blowers, the 3 track maintainers did not become aware of the approaching train in time to safely clear the track.
2. The A&B Rail Services supervisor, whom the track maintainers believed to be the designated safety watch person, was following up with other operational duties and was not directly overseeing the work at the switch.
3. The job briefing was conducted by Canadian National and the A&B Rail Services supervisor without the participation of the A&B Rail Services track maintainers, who were going to perform the work.
4. In the absence of up-to-date training, the 3 A&B Rail Services track maintainers were performing track work activities that were not permitted under safety watch protection and without appropriate track protection.
5. Despite the railway's obligation to ensure that others who are granted access to railway property are properly trained and supervised, and despite A&B Rail Services' obligation to protect the health and safety of its employees by ensuring they are properly trained, the A&B Rail Services track employees had not been fully trained in safe railway working practices, were not being directly supervised, and had not been made aware of the changes to the safety watch procedures.

Findings as to risk

1. If *Canadian Rail Operating Rules* training is not provided to all track workers, there is an increased risk that track work will be conducted without adequate protection.
2. If all employees whose safety is affected do not take part in comprehensive job briefings, track workers may not protect themselves from the risks inherent in the job tasks.
3. If safety watch-type procedures for track worker protection are not regulated, there is an increased risk that these procedures will not be applied and supervised on a consistent basis across railways and contracting companies.

Other findings

1. The train crew's actions were appropriate to the circumstances they encountered and were not considered causal to the accident.

Safety action

Safety action taken

Transportation Safety Board of Canada

On 08 January 2013, the Transportation Safety Board (TSB) sent Rail Safety Advisory (RSA) 01/13, Adequacy of Training Related to the use of Safety Watch Protection, to Transport Canada (TC). The RSA suggested that TC may wish to review the manner in which railways implement, monitor, and conduct training for safety watch protection to ensure that the instructions are properly applied and that adequate protection is provided to all track maintenance personnel, including contracted employees.

Transport Canada

On 28 February 2013, TC responded to RSA 01/13, indicating that it is working with the Railway Association of Canada to add a rule to the *Canadian Rail Operating Rules* (CROR) pertaining to "Safety Watch" and "Use of Safety Watch". In January 2014, TC advised that the Railway Association of Canada has submitted proposed revisions to the current CROR that will include rules on safety watch and lone worker protection. However, there is no targeted date for review by Transport Canada.

Additionally, TC's Ontario Surface Regional Office identified contractors working on railway property as part of a recent risk-based planning exercise. The results of the regional inspections will be assessed to determine what further action is required.

Alberta Occupational Health and Safety

On 26 December 2012, under the authority of section 10 of the *Alberta Occupational Health and Safety Act*, Alberta Occupational Health and Safety (OHS) issued a stop-work order requiring that:

- no track cleaning or maintenance work involving noise-generating equipment is to be completed by A&B Rail Services Limited (A&B) until this stop-work order is lifted; and
- A&B is to demonstrate to OHS how it will ensure the safety of any of its workers using noise-generating equipment on or near rail tracks in the future.

A&B Rail Services Limited

On 28 December 2012, A&B responded to Alberta OHS indicating that any new procedures would be disseminated and explained regarding current CN safety watch procedures and current A&B safety watch procedures and Safe Job Procedure – Safety Watch. New procedural modifications were provided to all employees, which state (in part):

- a) No workers will conduct work, maintenance, or construction on ANY main line track without positive track protection, as outlined in the *Canadian Rail Operating Rules (CROR)* with locations confirmed in writing with RTC [rail traffic controllers] and or CN site Supervisors.
- b) No workers will conduct maintenance or construction on any track other than main line track (IAW [in accordance with] CROR Rule 40.1 other than main track) without red flags and or private locks when practicable.
- c) Installation of portable derails on track where practicable to do so.
- d) ALL workers will receive training on the new SWP [Safety Watch Procedure] and SJP [Safe Job Procedure].
- e) Safety Watch training will be incorporated into all new hire and yearly re-hire training for ALL employees [...], in addition further instruction of safety watch requirements to be reviewed by the Forman [sic] in charge at site specific locations.
- f) Safety Watch will be used on all protected track where an adjacent mainline track is within 25 feet of the work area.
- g) All crews will immediately receive the new ABR Safety Watch Training if engaged in Snow Clearing or Maintenance work on unprotected track.
- h) Job Foremen [sic] will review with their crew, all the duties of the safety watch at daily job briefing prior to start of work and have them written down in each crew members job briefing book, prior to accessing any track and using a safety watch for track protection on that work day[...]
- i) All Foremen and Employees In Charge will ensure all workers receive a Site Specific Orientation on any site they have not visited within three months prior to the start of any work related activities, which will be written in their job briefing booklets.¹⁵

In addition, A&B established the following requirements:

- Before safety watch protection can be used, employees must complete the safety watch protection exam and must print, sign, and date the new Safe Work Practice and Safe Job Procedure.
- The track maintainers must be included in the job briefing, and assurance must be given that everyone understands the instructions. In addition, hazard assessments must be done clearly and concisely on the day that the work is taking place, and every employee must sign it.

Visit the Transportation Safety Board's website (www.bst-tsb.gc.ca) for information about the Transportation Safety Board and its products and services. You will also find the Watchlist, which identifies the transportation safety issues that pose the greatest risk to Canadians. In each case, the TSB has found that actions taken to date are inadequate, and that industry and regulators need to take additional concrete measures to eliminate the risks.

Appendix B – Canadian National’s General Engineering Instruction Clarifications (effective December 2011)

PROVISION FOR THE USE OF SAFETY WATCH PROTECTION

1.0 General

These instructions are intended to clarify and be used in conjunction with the CN General Engineering Instruction (GEI) 5.0, Safety Watch

Work that is performed on or about the track that does not require positive protection as provided by the Canadian Rail Operating Rules (CROR) may be performed with a Safety Watch. A list of work that can be undertaken under Safety Watch protection is attached. Safety Watch Protection is not applicable in multi-track Class 5 territory (i.e. multi track territory where freight trains speeds exceed 60 mph and passenger trains exceed 80 mph).

2.0 Duties of a Safety Watch

The sole duty of the Safety Watch is to protect working personnel through the observance of all train movements and hazards from all directions. The Safety Watch must dedicate their entire attention to this task and never engage in distracting activities, such as talking on a cell phone, text messaging, browsing, etc. In addition, they are never to engage in any other distracting activities, including the work being undertaken.

3.0 Job Briefing

Prior to implementing Safety Watch protection, the person in charge, the Safety Watch and the employee(s) being protected must conduct a thorough job briefing to ensure that at a minimum the following items are covered and there is a clear understanding of:

- who is the designated Safety Watch,
- where the Safety Watch will be positioned,
- what work is to be performed,
- how the work is to be performed,
- if additional clearing time is required
- the maximum speed of trains on that track and required sightline distance,
- the sightline distances at the work site,
- where the workers will clear on the approach of rail traffic,
- how the warning is to be given,
- where any tools are to be placed when clearing,
- who will clear the tools, and
- other risks at the work site.

This information must be documented (in writing) in the job briefing notes.

4.0 Determination of Adequate Clear Sightline Distance

There are a number of ways in which clear sightline distances can be determined. Employees should select the method that best suits their situation.

- 1) Track features, such as crossings, bridges, overpasses, turnouts, way side buildings, etc., whose mileage is known can be used as reference points to determine the sight distance to the work location.
- 2) Location of mileage boards can be used as a reference point to determine the sight distance to the work location.
- 3) If railway pole lines are present, these can be counted in either direction to obtain sightline distances.
- 4) If the work location is one that is frequented often (such as a turnout, road crossing, diamond crossing, etc.), a tape measure, measuring wheel or a track unit with a distance counter can be used to measure sight distances for all future visits to that location.
- 5) The use of portable hand held optical distance measuring devices may be used to determine clear sight line distances.

Note: Employees may be required to demonstrate how the sightline distance was obtained. Please ensure this information is recorded for permanent and ready access when required.

5.0 Clear Sightline Distances

Safety Watch protection will **NOT** be considered as adequate protection where sightlines, train speeds, weather conditions, restricted clearing ability, etc., do not allow sufficient time for each worker being protected to move to and occupy a previously arranged place of safety *not less than 15 seconds before a train moving at maximum speed for that track, reaches that point.*

Should more time be required to clear the track, it must be added to the 15 seconds.

Example: An employee is working under Safety Watch protection on a track where the maximum train speed is 35 mph. It is determined that it will take the employee 5 seconds to clear himself and his tools from the track and be in a place of safety after being warned of an approaching train. This 5 seconds must be added to the 15 seconds indicated above. Therefore, from the table below, the clear sight lines required are found under the 20 second column for a train speed of 35 mph, or 1030 ft. of clear distance in either direction.

MINIMUM REQUIRED SIGHTLINE DISTANCES

Train Speed (mph)	Required Sight Lines (in ft.)			
	15 seconds	20 seconds	25 seconds	30 seconds
10	220	295	370	440
15	330	440	550	660
20	440	590	735	880
25	550	735	920	1100
30	660	880	1100	1320
35	770	1030	1290	1540
40	880	1175	1470	1760
45	990	1320	1655	1980
50	1100	1470	1840	2200
55	1210	1615	2020	2420
60	1320	1760	2205	2640
65	1430	1910	2390	2860
70	1540	2055	2570	3080
75	1650	2200	2755	3300
80	1760	2350	2940	3520
85	1870	2495	3125	3740
90	1980	2640	3310	3960
95	2090	2790	3490	4180
100	2200	2935	3675	4400

Chart included in CN's 2011 GEI clarifications

WORK THAT CAN BE UNDERTAKEN USING SAFETY WATCH PROTECTION

	Description of Work	Track	Signals	Bridges
1	Adjusting switches/stands	no	no	no
2	Anchoring	yes	n/a	yes*
3	Bolt tightening or individual replacement	yes	yes	yes*
4	Bonding - without drilling	yes	yes	n/a
5	Bonding - temporary	yes	yes	n/a
6	Brush cutting - hand tools only	yes	yes	yes*
7	Cotter key replacement	yes	yes	n/a
8	Crossing - road surface installation or removal	no	no	no
9	Crossing testing	n/a	yes	n/a
10	Culvert inspections	yes	n/a	yes
11	Derail adjustment	yes	n/a	n/a
12	Digging/shoveling ballast by hand	yes	yes	yes*
13	Drifting joints	yes	n/a	n/a
14	Electric lock testing/opening	no	no	no
15	Gauge rod removal/installation	yes	n/a	n/a
16	Gauging - every 4th tie with hand tools	yes	n/a	n/a
17	Grinding	yes	yes	n/a
18	Hand measuring of clearances	yes	yes	yes*
19	Inspection of bridges from underneath or beside bridge	yes	yes	yes
20	Inspection of signal apparatus and appliances	yes	Yes	yes*

	Description of Work	Track	Signals	Bridges
21	Inspection of track - on foot	yes	yes	yes*
22	Joint drilling	no	no	no
23	Lagging screws - off track tools only	yes	yes	yes*
24	Lubricating	yes	yes	yes*
25	Minor bridge handrail and walkway maintenance, bolt tightening, removal from deck	n/a	n/a	No
26	Painting comp joints, switch handles, derails, safety appliances, etc.	yes	yes	yes*
27	Pole line work	n/a	yes	n/a
28	Rail replacement	no	no	no
29	Rail wear measurements	yes	n/a	n/a
30	SCC box testing	no	no	no
31	SCD installation, removal and maintenance.	n/a	yes	n/a
32	Shimming	no	no	no
33	Shoulder trimming with hand tools	yes	n/a	n/a
34	Shunting	no	no	no
35	Sign repair and installation - Mile/whistle/station	yes	yes	yes*
36	Signal alignment	n/a	yes	n/a
37	Signal and utility locates	yes	yes	yes*
38	Signal system disruptions	no	no	no
39	Slotting joints	yes	yes	n/a
40	Snow removal - hand tools only	yes	yes	yes
41	Snow removal - with compressors and backpack blowers** (Only applicable where track speed is 15 mph or less)	yes	yes	yes*
42	Spiking/clip installation	yes	yes	yes*
43	Spring switch testing (Only applicable on yard tracks where track speed is 15 mph or less)	yes	yes	yes*
44	Surveying/layout/staking/alignment measurements	yes	yes	yes*
45	Switch machine testing	no	no	no
46	Switch target replacement	yes	yes	n/a
47	Tamping by hand (without track jacks)	yes	yes	yes*
48	Thermite welding	no	no	no
49	Tie installation	no	no	no
50	Tie plate replacement (single tie plate without jacks)	yes	n/a	n/a
51	Tie marking/painting defective ties	yes	n/a	n/a
52	Welding/ points/frogs, and joints	yes	n/a	n/a



NOTES:

- 1) * denotes that the work is not applicable on bridges
- 2) Where the work to be performed is not listed in the above table, Safety Watch must not be used as a form of protection.
- 3) ** In the application of Item 41
 - a. applicable where track speed is 15 mph or less
 - b. when back pack blower is used, must utilize tag line to provide physical warning
 - c. when compressor is used physical warning may be provided by use of tag


Issued by:

**Office of the Chief Engineer
Structures and Engineering Standards
Issued: November 25, 2011
Revised: December 20, 2011**

Appendix C – Canadian National Job Aid for blowing snow with compressor, backpack blower

 FIELD LEVEL RISK ASSESSMENT		
Task: Blowing Snow with Compressor, backpack blower	Date:	
DTST Distance	Time Speed Location	
Task Location:	Emergency Meeting Point:	
Injury Free Days =	Rule of the Day	
Radio Channels RTC - 5 or 3	Engineering 84 Emergency * 0 #, 911	
Evacuation & Nearest Hospital		
Type of Protection Rule 105c, TOP, OCS, Rule 42,		
Safety Watch Details		
Location	Name	
Track Speed	Subdivision / Track ID	
Minimum Sightline Required	Working Limits	
Who's Watching	Time Limits	
How to Warn	Max Train Speed	
Where to Stand	Minimum Sight Line Distance	
Where to Clear		
Where & Who to Clear Tools		
Train Information		
Identify and Prioritize the steps and hazards below, then identify the plan to eliminate/control the hazards		
STEPS	HAZARDS	PLANS TO ELIMINATE / CONTROL
Start up Compressor	picked fingers on doors	ensure door latches are secure, if windy 1 person to assist
Hook Up Compressor	backing up hazards	on back up policy, 1 person out, guide onto hitch, is back up alarm working
Driving with Compressor	Backing up with Compressor	Stop with escape route planned out, eliminate backing up if possible, plan out route to travel - 1 person out if you must back up
	Compressor Hose	ensure wrapped on hose rack securely, ensure clearing train plan does not leave hose over track
Fuel Blower	spill fuel on people	must have blower on ground to fuel
Blowing snow	Debris in Face	ensure face shield and safety glasses on all members of crew, blow away from other employees
Safety Watch Details	hearing, view, not clearing quick enough	review safety watch update, must use tag line for backpacks, for compressor either tug on hose or shut off air supply, use hearing protection, must not use safety watch where track speed exceeds 15 mph
	trains, cars, track units	safety watch - touch shoulder or pull on air hose, 840.1
	noise	ear plugs and or ear muffs
	tripping, slipping	keep hose away from walking area, be aware of hose, use spikies if icy, ensure good tread on boots
	darkness	head lamps, truck work lights, flash lights, small red lights on safety vest
Reviewed at 1st break <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Reviewed at 2nd break <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Reviewed at 3rd break <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Is Lock Out / Tag Out required? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Warning ribbon needed? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Is worker working alone? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, explain:		
Please print and initial below (all members on this task) prior to commencing work. ALL NAMES MUST BE LEGIBLE.		
Worker name and initials below (please print clearly)		Employee in Charge Name & Signature:
Larry McKay		
Job Completion		Is the work area cleaned up? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are there any Hazards remaining? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, explain:		
Were there any incidents / injuries? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Reviewed by (Name and Signature):		
Job Aid - Field Level Risk Assessment		
Objective is to reduce or eliminate losses due to uncontrolled hazards		
Four Second Focus		Types of Hazards/Contacts
1. Identify the job steps and tasks	Struck against	Contact with electricity Caught in "Line of Fire"
2. Identify the hazards associated with each step	Struck by	Contact with heat or cold Caught on
3. Assess the level of risk for each hazard	Fall to lower level	Contact with radiation Caught between
4. Identify and put in place the controls to effectively control the risk	Slip/Trip or Fall from same level	Contact with chemical Contact/Esposure to sound/noise
	Overstress	Overexertion Overload

Appendix D – Canadian Pacific Railway’s Lookout Warning Policy

CPR Policy: Lookout Warning	<p>This policy provides information for the warning of employees performing work on or near railway tracks.</p> <p>NOTE: This policy is not applicable to a lone worker.</p> 
--	--

1.0 Lookout Procedures

1.1. General Information

This information is intended for the warning of employees on or near the track who do not have and do not require protection according to the rules.

1.2. Definitions

Lookouts - employees assigned to warn other employees of the approach of a movement or equipment

Lookout Warning - a means of affording a warning to workers in order to permit the employees to safely clear the track

Movement(s) – the term used in this policy to indicate trains, engines or transfers

1.3. Permissible Use

Lookout Warning must only be used when track protection according to applicable rules is not required. It must only be used at locations and under conditions that will permit all employees using such to receive the required warning signals in time to:

- i. suspend work activities; and
- ii. reach the designated place of safety no less than **15** seconds before the arrival of a movement or equipment.
- iii. Lookout Warning must not be used for work that will affect operation of movements.

1.4. Prior to Lookout Warning use

Before using Lookout Warning, the employee in charge must ensure that:

- i. Lookout Warning is only used for providing warning when protection required by rule is not required;
- ii. they can visually detect the approach of movements or equipment at maximum authorized speed and can occupy the designated place of safety 15 seconds before its arrival.

- iii. the ability to hear and see approaching movements and other on-track equipment is not impaired by background noise, lights, inclement weather, passing movements, or other physical conditions.

EXCEPTION: If a Lookout is providing warning signals to a single employee who remains within 25' of the Lookout, the noise level is allowed to be higher.

IMPORTANT: Lookout Warning must not be used if the sight distance does not provide enough warning for employees to reach the designated place of safety **15** seconds before a movement or equipment arrives.

- iv. Prior to assigning the duties of a Lookout, ensure the employee is able to:
 - detect and recognize approaching movements and equipment;
 - identify a place of safety where they and the employees can go when a movement or equipment approaches and record same on the prescribed form;
 - provide the required warning signals according to item 1.6
 - devote full attention to detecting approaching movements or equipment; and
 - determine how far down the track a movement or equipment must be before the warning signals to employees is given.
- v. All affected employees are provided, through a job briefing, with sufficient information to ensure that:
 - each employee is aware of the role and identity of the Lookout, including the warning signals to be provided and the designated place of safety, and when the Lookout must be given a break; and
 - each employee is aware of the method to be used for clearing the track when the command to do so is given by the Lookout.

1.5. Lookouts

- i. A Lookout's sole duty is to watch out for approaching movements or equipment and to provide warning signals to employees to cease activities and be in the designated place of safety at least **15** seconds before the arrival of the movement or equipment.
- ii. Lookouts must:
 - have a valid certificate of Rules Qualification at the "D" level as a minimum;
 - have the appropriate equipment to perform their duties, such as a warning whistle or horn and white disc;
EXCEPTION: The use of the white disc is not necessary when warning is being provided to a single employee who remains within 25 feet of the Lookout;
 - be on the ground close to the work area, in a location that provides a clear view of the area;

- not engage in any activities, including any unnecessary conversation, which may affect his or her ability to provide uninterrupted observation; and
- be able to evaluate his or her ability to act as a Lookout for extended periods of time.

IMPORTANT: It is the responsibility of the Lookout to arrange for relief or for a break if required. This will ensure that he or she continues to be alert and able to perform the duties of the Lookout conscientiously for the required period of time.

- iii. Provide warning signals in such a way that the warned employee can take action:
 - without having to look in any particular direction at the time of the warning signals; and
 - regardless of the noise levels or distractions at the work location.
- iv. The following chart as contained in the job briefing booklet must be used by Lookouts to determine the distance (in feet) that movements or equipment travel relative to their speed (in MPH).

DISTANCE TRAVELLED IN FEET, IN 15 SECONDS OF TIME, FOR VARIOUS SPEEDS			
MPH	Distance	MPH	Distance
5	110'	40	880'
10	220'	45	990'
15	330'	50	1110'
20	440'	55	1210'
25	550'	60	1320'
30	660'	65	1430'
35	770'	70	1540'

Figure 1

1.6. Warning Signals

On the approach of a movement or equipment the following warning signals must be given in sufficient time to permit employees to cease work activity and reach the designated place of safety at least **15** seconds prior to arrival of the movement or equipment moving at track speed.

- a. Sound a warning whistle or horn; and
- b. Hold the white disc at arm's length above head and then horizontally at arm's length towards the designated place of safety

When it is safe to resume work, the Lookout must hold the white disc horizontally at arm's length towards the work site.

EXCEPTION: The use of the white disc is not necessary when warning signals are being provided to a single employee who remains within 25 feet of the Lookout.

1.7. Employees Working Under A Lookout

- a. All employees using Lookout Warning must know the role and identity of the Lookout;
- b. be familiar with the warning signals that will be provided by the Lookout;
- c. remain alert for warning signals given by the Lookout;
- d. clear the track to the designated safe place as identified in the job briefing immediately when the warning signals are given; and
- e. stay until the signal is given to return.

1.8. Equipment For Lookout

- a. SAP part # 771200976 Paddle, 16" dia, white reflect, lookout kit
- b. SAP part # 771200974 Kit, lookout warning, PPE Equipment **which will contain:**
 - BAG - CP PART # 771200975
 - 16 INCH DIAMETER PADDLE, - CP PART #771200976
 - 20 INCH HANDLE - CP PART #771200977
 - FLASHLIGHT, TAKES 2 BATTERIES - CP PART #771200978
 - BATTERIES CP PART #736013458
 - WHISTLE - CP PART # 771200985
 - AIR HORN - CP PART # 771200983
 - AIR HORN REFILL - CP PART #771200984