Transportation Safety Board of Canada | Bureau de la sécurité des transports du Canada

RAILWAY INVESTIGATION REPORT
R09D0053

NON-MAIN-TRACK COLLISION

VIA RAIL CANADA INC. LOCOMOTIVE 6425
VIA RAIL CANADA INC. MONTRÉAL MAINTENANCE CENTRE
MONTRÉAL, QUEBEC
09 SEPTEMBER 2009

Canada

Railway Investigation Report

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VIA Rail Canada Inc. Montréal Maintenance Centre
Montréal, Quebec
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Summary

On 09 September 2009, at approximately 0130 Eastern Daylight Time, while switching at the Montréal Maintenance Centre in Montréal, Quebec, VIA Rail Canada Inc. locomotive 6425 collided with a cut of empty coaches on service track S2W. The locomotive and three coaches sustained damage. There were no injuries.

Ce rapport est également disponible en français.

Other Factual Information

The Accident

On 09 September 2009, a VIA Rail Canada Inc. (VIA) hostler crew (the crew) was performing switching operations with locomotive VIA 6425 in the east end of the Montréal Maintenance Centre (MMC) in Montréal, Quebec. The crew consisted of a controlling hostler (CH), who had 8 months of experience, and an in-charge hostler (ICH), who had 18 months of experience. A hostler at the MMC is an employee who is assigned to move motive power units and cars over yard tracks within the confines of the MMC between locations where the units and cars are maintained and the location where they are switched into or from trains. Both crew members were familiar with the yard, met fitness and rest standards, and were qualified for their respective positions.

At 0018, [1] the crew was called by the yard controller and was instructed to exchange locomotive VIA 6425 with locomotive VIA 6445 on passenger train 635, stationed within the maintenance shop building (the shop) on track S2W (see Figure 1). At 0123, after finishing their switching operations in the east end of the MMC, the crew members stopped VIA 6425 in track H3 adjacent to the shop, where the CH detrained. He then uncoupled VIA 6445 from train 635 and proceeded west past the S1/H3 turnout. Locomotive VIA 6425, controlled by the ICH, followed on track H3, and stopped approximately 40 feet behind. The ICH applied the brakes on VIA 6425, exited the locomotive and instructed the CH to couple the locomotives.

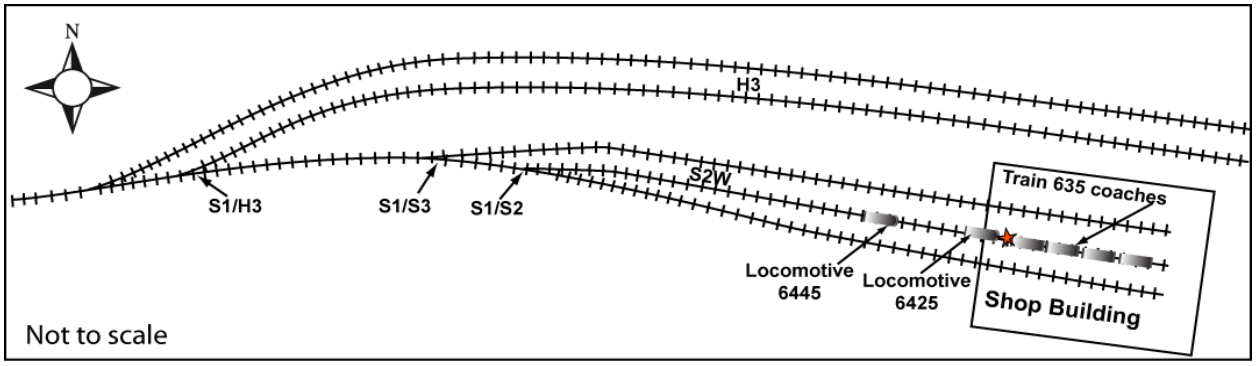

Figure 1. Diagram of the accident site

Once the locomotives came into contact and stopped, the ICH disabled the brakes on VIA 6425. The ICH boarded the leading steps of VIA 6425 and instructed the CH to move towards the shop to couple to train 635's coaches.

At approximately 0131, as the train approached the shop and the CH began to slow the movement, the locomotives separated. Locomotive VIA 6445 stopped approximately 100 feet from the shop entrance while VIA 6425 continued uncontrolled and collided with the coaches of train 635. The ICH jumped off VIA 6425 just before the locomotive entered the shop. No MMC workers were on or near the passenger coaches at the time of the accident. There were no injuries.

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[1] All times are Eastern Daylight Time.

Site Examination

Locomotive VIA 6425 collided with coach VIA 3458, which was located approximately 100 feet within the shop building. All the equipment involved remained upright on the rails. Examination of both locomotives and the coaches did not show any pre-existing defects. However, it was observed that the brakes on VIA 6425 were disabled. Locomotive VIA 6425 and coach VIA 3458 sustained damage to the knuckles. The interior of coaches VIA 3458, 3342 and 3316 also sustained minor damage. There was no damage to the facility or the tracks.

Yard Information

The shop building is located in the middle of the yard. Track S2W extends westward from the shop building by approximately 450 feet and ends at the S1/S2 switch. Track S1 continues another 450 feet to the S1/H3 switch. Track H3 runs parallel and north of track S2W, running westward approximately 900 feet to the S1/H3 switch. Track H3 then continues another 400 feet before joining with Canadian National's (CN) main track.

Recorded Information

The event recorder data from VIA 6445 indicated that the locomotive was in idle for 3 hours 42 minutes. Then, at 0128, it moved forward 900 feet then stopped. At 0131, the locomotive backed up 40 feet and stopped for 13 seconds and then continued moving backwards for 700 feet and stopped.

Locomotive VIA 6425's event recorder data indicated that the locomotive stopped at 0125 then moved forward for 900 feet. After stopping, the independent brake cylinder pressure decreased to 1 psi and the brake pipe pressure began to decrease to zero as the locomotive moved backward towards the shop.

Montréal Maintenance Centre Operations and Hostler Training

The MMC maintains and services approximately two thirds of VIA's passenger rolling stock fleet. Maintenance is carried out by specialized shop employees, who comprise the majority of the 620 staff at the MMC. Movements of rolling stock are performed by 38 hostlers. Hostlers work in pairs (CH and ICH), which are established through the job bidding process as set out by union agreements. There are three working shifts (night, day, and afternoon). The night shift is mostly made up of less-experienced hostlers and has a high turnover of employees. The number of hostler crews allocated per shift is based on the work anticipated on a regular basis. The work to be performed during the shifts is planned and allocated as a package at the beginning of the shift. Once hostlers have completed the package of work, they are not normally further tasked, unless unanticipated work is identified and allocated by the yard controller.

Applicants may be sourced internally or externally, and may have limited (or no) railway knowledge and operating experience. To fulfill the requirements for a hostler position, employees must undergo a six-week training program. At the end of the program, employees who pass the final evaluation are considered qualified to carry out the full range of duties as hostler.

The program consists of three weeks of formal training on relevant sections of the *Canadian Rail Operating Rules* (CROR), MMC special instructions and operations. During the final three weeks of the program, the trainees receive on-the-job training by assigned coaches who are hostlers. Coaches are selected based on seniority from a pool of experienced hostlers who have submitted their names. The process for selecting coaches does not include testing their suitability or teaching ability.

Instructions for Coupling and Moving Rolling Stock

All movements within the MMC are governed by the CROR and by VIA's Operating Rules for Locomotive Attendants which incorporate the relevant CROR rules. In both documents, CROR Rule 113(e) states (in part) that "When coupling to equipment for any purpose except when humping or flat switching where cars are intentionally let run free, the coupling must be stretched to ensure it is secure."

VIA's MMC General Special Instructions (c) and (d) contain the following information (in part) pertaining to the movement of rolling stock:

> (c) The air brake system must be operational on every piece of equipment during movement. When equipment with a defective air brake system must be moved the crew must contact the controller for instructions.

Before authorizing the movement, the controller will check for any conflicting movements in the yard and requires, as a safety measure, that a safety pin is inserted into the knuckle in order to prevent unintentional uncoupling; and

> (d) Before moving an engine, the locomotive attendant must ensure that air brake control devices are properly positioned, the air compressor is working normally and the air gauges indicate proper pressure required for service. In addition the appropriate brake test must be performed.

MMC General Special Instruction (e) defines the proper air brake test when coupling two locomotives together.

Coupling and Moving Rolling Stock at Montréal Maintenance Centre

In this occurrence, the coupling between the locomotives had not been confirmed by stretching before the movement to ensure that it was secure. The usual practice for this crew was not to stretch the coupling but rather to look at the safety pin holes. Proper alignment of the holes indicates that the coupler pins could be locked into place and the coupling should be secure. The crew disabled the brakes by cutting them out and did not ensure that the air brake control devices were properly positioned. In addition, the air hoses were not coupled between the locomotives and the required brake tests were not performed. This practice shortens the time for completing the movement by 5 to 10 minutes.

These adaptations [2] of Rule 113(e) and MMC General Special Instructions (c), (d) and (e) were shared by many crews at the MMC. However, the more experienced hostlers included some safety measures to reduce risks. For instance, they would also insert the safety pin into the holes to confirm their alignment and ensure that the knuckles did not separate. The hostlers were aware of the relevant procedures and rules, but the adaptations were employed to make the work easier and allowed hostlers to work more quickly.

Supervision of Hostlers at Montréal Maintenance Centre

At the MMC, hostler supervision is the responsibility of the yard controller and the yard manager. They are responsible to ensure the safe and efficient operations in the yard, which includes conducting annual proficiency evaluations on each hostler. While being directly responsible for supervision of the hostlers, in practice, the yard manager delegates this responsibility to the yard controllers because of competing priorities. During the night shifts, when the yard manager is not present, the yard controller is responsible for supervision.

Yard controllers are responsible to plan, organize, and oversee switching movements in the MMC. They complete various reports, answer the phone and handle radio communications. In addition, they monitor employee compliance with operating rules and ensure that employees are working safely.

The yard controller monitors the hostler crews from the tower situated in the east end of the shop building facing away from the location of the occurrence. Many of the yard controller's tasks, such as answering the phone or the radio, require immediate attention and take precedence over yard monitoring. The yard controller can visually monitor the east end of the yard through windows and can view other areas by selecting security cameras positioned throughout the yard. At night, there are areas of the yard that are difficult to monitor from the tower due to the glare on the windows and the lack of adequate lighting across the yard. The yard controller also monitors radio communications between hostlers. At the time of the occurrence, the yard controller was filling out paperwork and was not actively monitoring the actions of the hostlers.

Proficiency Evaluations

VIA's MMC safety policy [3] requires that regular proficiency evaluations be conducted and that non-conformances be analysed to identify root causes and be disposed of diligently. These policy requirements are delegated to the yard managers. VIA records indicate that, in the year before the accident, proficiency evaluations were performed on four hostler crews. These evaluations consisted of observing the crews from a distance and listening to the radio communications.

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2 Adaptation is a deliberate decision to act contrary to a rule or working procedure.

3 VIA Rail Canada Inc., *Safety Management System Manual, Equipment Maintenance*, document SMS-EM-Manual2009-09-18

In addition, although not part of the proficiency evaluation, the yard manager carried out yearly monitoring and mentoring activities of each hostler to identify and correct rules misinterpretations. Non-conformances were normally dealt with informally by the yard manager and the yard controllers and were not recorded in VIA's AUDIT database.

In the case of rule infractions resulting in damage to equipment, the MMC's Corrective Action Process [4] (CAP) requires a systematic analysis to identify the root cause ("deficiency of process or controls") and a corrective action plan that must be tracked to ensure that the deficiency is eliminated. The Accident/Incident Document that is filled after an occurrence includes a Root Cause Analysis section and a Corrective Action section. A review of the MMC accident reports between 2004 and 2009 indicated that the analyses conducted did not always identify the cause and contributing factors of the accidents, but were normally focussed on identifying rule non-compliance. Corrective actions put in place following an accident were not systematically recorded, except when they included discipline or a review of the accident with the hostler concerned.

An audit of VIA's safety management system was undertaken by Transport Canada (TC) from 18 February to 04 April 2008. The initial phase, which consisted of a documentation review, was undertaken at VIA's facilities in Montréal. The on-site verification phase, which included interviews, record checks and inspections, was undertaken at various locations across the railway's system. TC's audit revealed that supervisors in the transportation department did not effectively conduct proficiency evaluations according to the Employee Proficiency Profile System (EPPS) and had not adequately input data in the company's system. The audit also revealed that analysis of railway incidents and accidents was not adequate, and consequently, safety objectives and associated initiatives did not appear to be developed to address accidents. While hostlers are not part of the transportation department, similar conditions were observed by TSB investigators at the MMC where the hostlers are employed.

Analysis

Neither the condition of the rolling stock nor the condition of the track were considered contributing factors in this accident. The analysis will focus on the adaptations implemented by the hostler crew and the methods used by management to identify and correct adaptations.

The Accident

While being pushed towards the shops, locomotive VIA 6425 uncoupled from VIA 6445, ran uncontrolled, and made contact with the coaches for passenger train 635. The knuckles did not engage properly to provide an effective coupling when the two locomotives came into contact. Furthermore, a stretch test was not performed, the air hoses between the locomotives were not connected and the brakes were disabled on VIA 6425.

The coupling of cars is affected by the alignment and condition of couplers, weight and speed of cars and other factors. Since it is not uncommon to experience non-engaged couplers during switching activities, which can lead to uncontrolled movements, administrative defences such

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4 VIA Rail Canada Inc., "Corrective Action Process," SMS-Sys-Standard-20.0

as CROR Rule 113 (e) and VIA's General Special Instructions (c), (d) and (e) have been developed to mitigate the risks. These rules have been designed to ensure that crews confirm that couplers are engaged and brakes are functional.

VIA MMC hostlers were aware of the relevant procedures and rules. But nevertheless, adaptations were taking place because they made work easier and allowed hostlers to save time. Since work was normally allocated as a package at the beginning of the shift, working quickly allowed a hostler crew to take longer breaks between allocated tasks or to take a break at the end of the shift if all the necessary work had been completed. Work allocation was conducive to the development of adaptations because hostler crews benefited by hastening their assigned tasks.

While rules and standard operating procedures are prescribed to set boundaries for safe operations, under certain situations, workers will adapt these rules, which can lead to the use of unsafe practices. Without regular supervision, training and enforcement of the expected boundaries, individuals are likely to adapt procedures until the actual unsafe boundary is found through the occurrence of an accident. The communication of successful adaptations between workers will lead to the use of these adaptations throughout the organization unless adequate supervision is provided.

Adaptation to Work Procedures by Hostler Crews

At the MMC, adaptations were seldom identified by the yard controllers or the yard manager because they were afforded few opportunities to observe the hostlers, particularly during the night shift, when supervision was hard to conduct due to multi-tasking and difficulties in viewing the work site. Without frequent and direct monitoring to educate and correct employee behaviour, the relatively less-experienced hostlers adopted non-standard work practices related to the application of Rule 113 (e) and General Special Instructions (c), (d) and (e), thereby increasing the risks of accidents.

Root Cause Analysis for Non-Conformance

VIA's safety policy required regular proficiency evaluations and the identification of non-conformances, root causes and remedies. However, shortcomings in these areas were identified in the transportation department by TC during the audit conducted in 2008 and were also observed at the MMC during this investigation.

VIA records indicated that, in the year before the accident, proficiency evaluations were only performed on four hostler crews. They were supplemented by monitoring and mentoring activities carried out by the yard manager. However, non-conformances were generally dealt with informally and were not recorded in VIA's AUDIT database. The few analyses conducted did not identify the causes and contributing factors of the accidents, but rather stated a rule non-compliance. The lack of safety records and the inadequacy of root cause analysis of non-conformities concealed underlying systemic issues. Therefore, management was not alerted to the frequency and scope of the non-conformances, and no corrective actions were taken to address underlying issues such as insufficient monitoring and supervision. Without a suitable

process for analyzing and recording the root cause for non-conformance, underlying issues such as adaptations to safe work practices will remain concealed, increasing the risk of accidents.

Findings as to Causes and Contributing Factors

1. While being pushed towards the shops, locomotive VIA 6425 uncoupled from locomotive VIA 6445, ran uncontrolled and struck the coaches from passenger train 635.

2. Since a stretch test had not been performed, the crew was not aware that the couplers were not engaged.

3. Because the brake system was disabled on VIA 6425, the separation did not initiate an emergency brake application to stop the locomotive before it collided with the coaches.

4. Work allocation was conducive to the development of adaptations because hostler crews benefited by hastening their assigned tasks.

5. Adaptations were seldom identified by the yard controllers or the yard manager because they were afforded few opportunities to observe the hostlers, particularly during the night shift, when supervision was hard to conduct due to multi-tasking and difficulties in viewing the work site.

Findings as to Risk

1. Without frequent and direct monitoring to educate and correct employee behaviour, relatively less-experienced employees may adopt non-standard work practices, increasing the risk of accidents.

2. Without a suitable process for analyzing and recording the root cause for non-conformance, underlying issues such as adaptations to safe work practices will remain concealed, increasing the risk of accidents.

Safety Action

The Board is not aware of any action taken by persons with a direct interest or others at this time as a result of this occurrence.

This report concludes the Transportation Safety Board's investigation into this occurrence. Consequently, the Board authorized the release of this report on 22 September 2010.

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