

 **LOOKING
OUT FOR
EACH
OTHER**



Leadership in Safety

2016

An Overview of CN's
Safety Management System





Safety first

Of all the progress we made in 2015, nothing is more important to us as railroaders than how we did in terms of safety. The significant year-over-year improvements we made in all metrics, specifically the FRA injury ratio, FRA accident ratio and TSB train accident ratio reflect how hard CN railroaders rallied to improve our safety performance. It took a lot of hard work and focus to execute to plan but we achieved it thanks to our exceptional team.

Delivering safely and responsibly is a core company belief that drives how CN conducts its business every day. We make significant investments every year to maintain a safe operation, through our top-notch training, technology and infrastructure improvements. In 2016, CN plans to increase its investments with approximately C\$2.9 billion in its capital program, of which \$1.5 billion will be targeted toward track infrastructure, to continue operating a safe railway and to improve the productivity and fluidity of the network. We will also continue to invest in a wide range of industry-leading technologies to monitor the condition of track and rolling stock and enhance our strong technological base for the early detection of defects.

Building a strong safety culture is also fundamental to being a leader in safety. Our aim is to strengthen our safety culture through significant investments in training, coaching, recognition and engagement activities that empower employees to help each other stay safe. I'm particularly proud of our efforts to expand our peer engagement programs through a deepening of our *Looking Out For Each Other* mindset, which encourages employees to step in, speak up, and help keep our employees, customers' goods and communities safe. The training is enhanced by the work of the over 100 joint management-union Health and Safety Committees at CN to reduce injuries and accidents. I am also pleased with how many of our seasoned railroaders with decades of experience are working together with recent hires throughout our network to help make CN safer and more efficient.

CN's goal is to become the safest railroad in the industry. I encourage you to read through our latest report, which documents our safety programs and achievements, and how we are strengthening our commitment to safety.

Claude Mongeau
President and Chief Executive Officer



2015 can be considered a comeback year in our safety journey. We saw two very different stories unfold in the year. It was a humbling first half, a story of the best team of railroaders in the industry facing many tough challenges to operations and its safety performance. We regrouped, and worked hard to understand the safety issues in the Company from every angle. Our internal and external review allowed us to develop comprehensive preventive action plans focused in the areas of People, Process, and Technology and Investments – work which is among our best lines of defense to reduce risk.

The second half of the year was a story of remarkable turnaround. Employees recommitted themselves to doing the right thing in working safely, bolstered by the *Looking Out For Each Other* training in how to support each other to protect everyone's safety. An initiative of the CN Joint Union-Management Policy Health and Safety Committee, almost 17,000 Mechanical, Engineering, Transportation and Intermodal employees have received the training on *Looking Out For Each Other*.

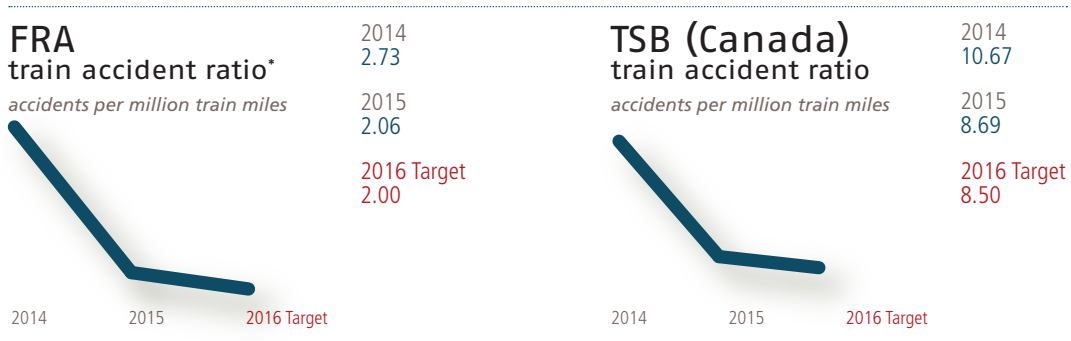
It was also a turnaround story on the main track. CN implemented additional detection and inspection technologies on the network and used Predictive Data Analytics – leveraging data from our industry-leading wayside detectors – to take safety to the next level. Our Engineering team developed “Engineering Critical Task Checklists,” a best-in-class structured process to support quality execution of track inspections and repairs.

Supporting these efforts was the continuing internal focus provided by our safety committees and Policy Health and Safety Committee as well as strong external connections, including our partnership with St. Mary's University in Halifax, Nova Scotia, where we have founded the world-class CN Centre for Occupational Health and Safety.

Sustaining the momentum in 2016 will take hard work, determination and teamwork – all qualities that are integral to CN's culture. Let's continue our safety journey and progress from a position of strength to strength.

Sam Berrada
Vice-President, Safety and Sustainability

**Taking safety
from strength
to strength**



* The FRA ratio includes only accidents with a cost in excess of US\$10,500 while the TSB ratio includes all accidents.

Safety metrics

Accident ratio

2015 results

- Carried out Corridor Risk Assessments.
- Focused on the root causes of main track accidents through Engineering and Mechanical initiatives.
- Put a strong focus on training and coaching to reduce the number of non-main track accidents.
- Used "Heat Mapping" to pinpoint accident causation and develop action plans.
- Initiated multi-functional safety task force to address top safety issues to help us turn the corner on our safety performance.
- Initiated Engineering Process Controls.

Key 2016 initiatives to reach targets

- Implement the recommendations of CN's Safety Task Force, which was established to reduce accidents and injuries.
- Have each division of the railroad continue to focus on seven critical switching rules which account for the majority of non-main track accidents.
- Roll out safety plans in line with "Expectations for Safety Leaders," which clarifies the proactive measures for safety that are expected of general managers, superintendents and functional leaders.
- Continue Corridor Risk Assessments focused on CN's secondary main track and implementation of technologies and processes to further enhance derailment prevention.
- Increase capital investment and focus on critical areas, such as CN's secondary main track in Western Canada as well as new rail on core routes.
- Maintain the focus on rules compliance and safety culture.
 - Continue the work of the CN Technology Working Group, a multi-functional team that looks at safety technologies and data to drive improvement.
 - Strengthen quality and consistency of roll-by inspections.



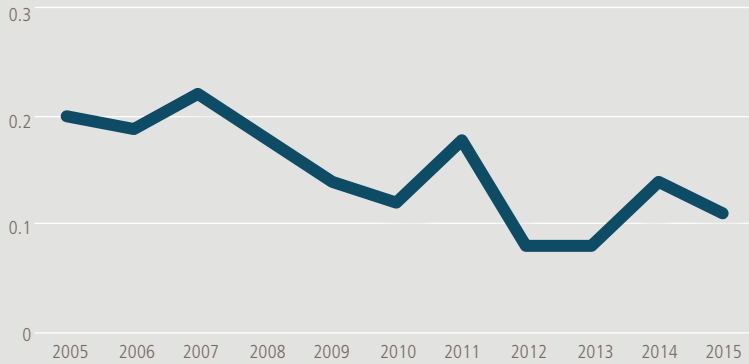
Long Term Trend – Main Track Accidents

CN's investments in initiatives such as enhanced training, new technologies and infrastructure bring safety improvements over multi-year periods. As illustrated by the graphs below, our unwavering commitment to such investments has resulted in a substantial reduction in main track accidents.

FRA

main track accident ratio

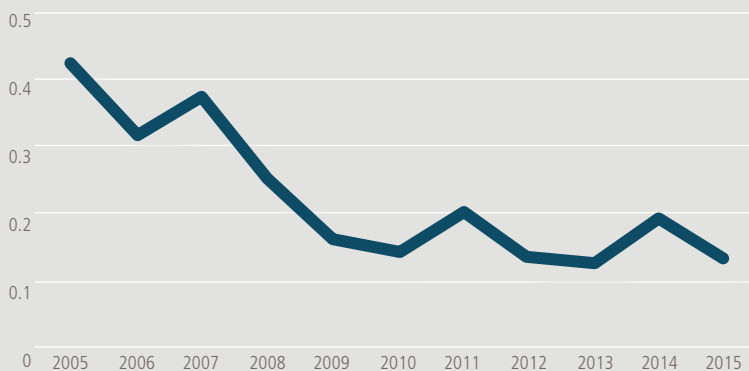
accident rate per billion gross ton miles



TSB

main track accident ratio*

accident rate per billion gross ton miles



* Transportation Safety Board (Canada): Note that regulations were modified in 2014.



Safety metrics

Injury ratio

2015 results

- Focused regional/divisional safety action plans on local injury causes.
- Action plans developed by Health and Safety Committees to help address top injury causes.
- Strengthened CN's safety culture through *Looking Out For Each Other*.

Key 2016 initiatives to reach targets

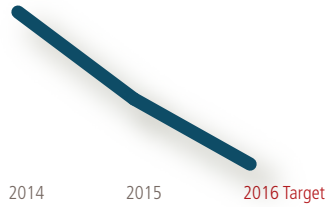
- Continue to enhance CN's safety culture through *Looking Out For Each Other*, Safety Summits, communications, education and cause-finding.
- Develop and implement specific initiatives to sustain *Looking Out For Each Other* in each Region and Function.
- Leverage CN Campus to meet the learning needs of CN's current and future railroaders.
- Continue to address top injury causes at a local level through compliance and safety culture initiatives.
- Continue the work of CN's Safety Task Force, which develops initiatives to address top safety issues such as slips, trips and falls, and injuries related to entraining and detraining.

FRA
personal injury ratio
injuries per 200,000 person hours

2014
1.81

2015
1.63

2016 Target
1.50



CN's Safety Management System



**“Nothing is so important that it can’t be done safely.
Always be vigilant and take the time to do the right thing.”**

JIM VENA

Executive Vice-President and Chief Operating Officer

To incorporate safety into daily operations, CN's Safety Management System (SMS) focuses on initiatives in the following key areas: People, Process, Technology and Investments.

A Safety Management System (SMS) is “a formal way to make safety part of day-to-day railway operations. It includes safety goals and performance targets, risk assessments, responsibilities and authorities, rules and procedures, and monitoring and evaluation processes.” *

All federally regulated railway companies must implement and maintain an SMS and report to Transport Canada on their safety performance, safety goals, and new safety efforts every year. CN works closely with the regulator and will continue to enhance its SMS in 2016.

**CN’s SMS Plan is an industry best practice in Canada
and has been included in Transport Canada’s
“Safety Management System Guide of Best Practices.”**

CN’s SMS provides the company with a focused approach to building a safety culture throughout the network. CN’s Plan helps supervisors understand the specific components of the SMS that they are responsible for implementing or communicating at the local level. The Plan, which has been enhanced every year since its release in 2008, describes concrete initiatives such as employee involvement in safety, risk assessment and auditing. With this information, regional/functional leaders are able to develop detailed action plans for their operations.

* Defined by Transport Canada. For information on how CN's SMS is aligned with Transport Canada's regulations please see page 41 of this brochure.

People



"Looking Out For Each Other is a vital safety mindset. We need to understand, support and integrate it into our daily lives to ensure everyone goes home safe at the end of the day."

JIM VENA

Executive Vice-President and Chief Operating Officer

CN invests significantly in training, coaching, recognition and employee engagement initiatives in order to strengthen our safety culture. The Company has taken a systematic approach to training and developing the new railroaders it hires every year, with activities such as *Looking Out For Each Other*, intensive field training, Onboarding and Safety Summits.

Safety Culture

CN continues to measure and strengthen its safety culture, in accordance with Transport Canada's guidelines. CN is the only railroad in North America to measure safety culture on an ongoing basis. Several of its initiatives have been recognized by Transport Canada and working groups that were formed as a result of the Railway Safety Act Review of 2008 that are addressing safety culture in railroads.

Looking Out For Each Other

Looking Out For Each Other is an integral part of CN's safety culture. It's a vital safety mindset employees are taught and encouraged to integrate into their daily practices to ensure everyone goes home safely at the end of the day.

- CN initiated *Looking Out For Each Other* in 2014, with the support of its Joint Union-Management Policy Health and Safety Committee. The successful peer-to-peer engagement strategy is designed to:
 - Raise awareness among employees of the top causes of incidents and injuries.
 - Identify and review safe work procedures for those activities.
 - Train employees to be aware of their surroundings and to recognize potential at-risk work practices or situations in the field.
 - Teach employees how to provide constructive feedback to their peers.
 - Learn from past incidents to prevent a reoccurrence of the same event and help each other stay safe.

In 2015:

In the fall of 2015, the CN Joint Union-Management Policy Health and Safety Committee was engaged in a new phase of this peer-to-peer program, with training for thousands of employees to promote safe work procedures. Almost 17,000 Mechanical, Engineering, Transportation and Intermodal employees received specialized training on *Looking Out For Each Other* that included interactive learning scenarios to help them recognize the at-risk work practices that happen in the field. In addition, employees learned how to effectively communicate with their co-workers when observing an unsafe act and how to support them in working safely.

In 2016, *Looking Out For Each Other* will continue to be an important aspect of CN's safety culture to help keep all our railroaders safe.

Training
Qualification Standards for Operating Crews (QSOC)

The new QSOC re-certification initiative reflects the significant investment CN has made to modernize and increase the effectiveness of its new hire training programs. Transportation employees can now receive training materials in several different formats and access electronic versions either at work or from home to learn at their own pace. This initiative is designed to leverage technology as well as respond to the learning needs of employees. The work will evolve as we obtain employee input to further strengthen the process.

CN Campus

CN's two state-of-the-art training centres in Winnipeg, MB, and Homewood, IL, provide CN students with hands-on and classroom training for all key railway jobs.

Each centre offers courses for seasoned and new railroaders, from conductor to car mechanic and from track supervisor to signal maintainer. Employees receive hands-on training in ultra-modern indoor labs with equipment such as locomotive simulators and, very soon, dispatcher stations. Outdoor labs are equipped with dedicated rolling stock, track and wayside equipment, as well as field training equipment.

Since the opening of the campuses, almost 15,000 employees have attended training.

Field Training

CN continues to enhance its structured two-week curriculum covering core railroad activities, which is part of the company's seven-week conductor training program. The program is a key component in preparing CN's new hire conductors to assume their duties. A field training program has also been implemented for track maintainers, work equipment operators and other employees.

On-the-Job Trainers (OJT)

On-the-Job Trainers are qualified employees who continue to enhance the training of new CN railroaders. Acting as mentors, OJTs coach new hires on the safe execution of their jobs and evaluate their progress throughout their training.



Recognizing Excellence

The CN Joint Union-Management Policy Health and Safety Committee recognizes the top three Health and Safety Committees in the company for improving safety in the workplace with an award program.

Congratulations to the following Committees for having taken safety to the next level in 2015:

Moncton Interfunctional Committee

Moncton, NB

Greater Vancouver Terminal – Transportation

Vancouver, BC

Transcona Mechanical

Winnipeg, MB



Locomotive Engineer Training

Trainees in CN's Locomotive Engineer Program use state-of-the-art locomotive simulators and a modernized training curriculum that includes updated training material and simulation scenarios. Students are evaluated on Rules, CN's train handling policy, efficiency and fuel usage.

Refined On-the-Job Training

CN continued to strengthen its robust Trainee Evaluation Form (TEF), which captures a trainee's progress and assists trainers in responding to individual learning needs. TEF promotes peer-to-peer communications between a trainer and trainee by outlining the safety expectations for the new hire and evaluating his/her level of proficiency for all the required skills or activities for qualification. Scores are updated with every new trip the new hire takes.

- The tool is being used in the training of new hires in Transportation, locomotive engineers, track maintainers, Rail Traffic Control employees and assistant track supervisors.
- A new comprehensive training report was developed in 2015 to allow On-the-Job Trainers and managers to summarize the classroom, field training and performance of trainees.

Onboarding

The Company's Onboarding program is designed to ensure new employees are equipped with the resources and knowledge they need to work safely and efficiently and to respond to their needs. With a sizeable proportion of CN's workforce having less than two years of service, the Onboarding program continues to be important to guide and develop newer employees. After they successfully complete their initial training, CN continues to focus on refining new railroaders' skills and to build solid relationships with each one of them. Supervisors and coaches connect regularly with the new hires and provide feedback and coaching as needed.

Employee Involvement

Employee involvement is a fundamental part of CN's Safety Management System and is strengthened through a number of initiatives.

Prevent

CN's Policy Health and Safety Committee, in conjunction with St. Mary's University in Halifax, NS, launched a confidential telephone safety hotline across most of its system to better understand the underlying causes of accidents and injuries. Called "PREVENT," the hotline provides a means for employees to confidentially report near miss events, incidents and other significant safety issues through a non-punitive process. Employees may share their experience by calling 1-855-323-4007.



Safety Summits

Local management led 144 summits in 2015. These sessions are an opportunity to engage employees in strengthening safety and culture. Summits promote effective two-way communications and the sharing of best safety practices. Of particular importance is the opportunity to listen to employees about their ideas, opportunities and challenges that can be addressed jointly. Safety Summits will continue in 2016 to reinforce CN's positive safety culture.

Health and Safety Committees

CN has 107 joint union-management committees across the system.

In 2015:

- CN continued to deliver systematic support to the committees by teaching risk assessments and providing assistance in developing annual action plans to address top causes of accidents and injuries.
- CN's Policy Health and Safety Committee redesigned the training committee members receive, making it more interactive and specific to job functions. The redesign was tested with various participants in the first half of 2015 before being rolled out later in the year.

Process



“No matter the job, what we all want most in running our railroad is to keep each other, our customers' goods and our communities safe.”

JIM VENA

Executive Vice-President and Chief Operating Officer

Process initiatives aim to make safety a systematic part of all railroad activities and to focus on the top causes of accidents and injuries.

Engaging with Communities on Safety

For more than two years, CN's Corporate Services, working with the Dangerous Goods team, has progressed with work on a Structured Community Engagement Plan, reaching out to municipal officials and their emergency responders along its North American rail network. The objective of the program is to review CN's comprehensive safety programs, share relevant information on dangerous goods traffic, and discuss emergency response planning and training, which CN helps provide.

In 2016, CN will continue the dialogue between the Company and municipalities. The Company's outreach program has reached about 1,100 communities in Canada and 900 communities and counties in the US, and supplements governmental and regulatory direction.

Involving Employee Representatives

CN values the input of its employees and labour representatives in running a safe operation.

In 2015:

At the 11th annual Safety Management System/Hazard Prevention Program conference, CN and the Company's Canadian Labour Policy Health and Safety representatives discussed key safety issues such as the use of mobile devices in the operation, the second phase of CN's peer engagement program, *Looking Out For Each Other*, and main track authority violations. Many key recommendations from the conference are being followed through and progress is being monitored in policy committee meetings.

Dangerous Goods and Emergency Response

Every year, CN's Dangerous Goods group takes steps to enhance the Company's emergency preparedness and system protection, with a strong focus on safety, regulatory compliance and effective emergency response. CN's DG response team consists of:

- 12 Dangerous Goods Officers strategically located across Canada and the US, and two officers in Montreal and Chicago
- 12 employees from various departments across the network trained as Dangerous Goods Responders
- Specialized emergency response contractors
- Shippers' emergency response teams
- DG specialists from the Railway Association of Canada

CN strengthened its incident response capability by acquiring specialized equipment such as five foam trailers and four response trailers equipped with pumps and transfer equipment.

CN's DG team delivers Railroad Emergency Response courses and other presentations, using CN's 911 training car and trailers. The team also holds several training events at the Security and Emergency Response Training Center (SERTC) in Pueblo, Colorado. These include a one-week CN-sponsored Tank Car Specialist training course for firefighters from across North America, a one-week course for emergency response contractors, and two Crude-By-Rail courses for firefighters. An important component of the group's work is supporting TransCAER® (Transportation Community Awareness and Emergency Response), an outreach effort to train community emergency personnel situated near rail lines where dangerous goods are transported.

In 2015 the Dangerous Goods team:

- Participated in nearly 300 TransCAER® events across the system, bringing critical training to over 6,300 participants who might face dangerous goods issues. Since 1988, CN has participated in nearly 3,700 TransCAER® events, reaching over 89,000 first responders.
- Earned the prestigious TransCAER® National Achievement Award from the American Chemistry Council.
- Actively participated in CN's Structured Community Engagement Program across the network.

Corridor Risk Assessments

CN is examining the key corridors on its network to assess risk and to determine what technologies and processes could be used to mitigate the risk. A multifunctional team considers a number of risk factors, including the proximity of communities along CN's right-of-way, environmentally sensitive areas and the volume of dangerous goods transported along those corridors. The assessments to date have identified opportunities to use technology to further reduce the frequency and severity of potential derailments, some of which are being addressed through CN's special Capital Technology Fund.

In 2015, CN completed assessments of several branch lines utilizing the corridor risk assessment methodology it developed. CN has also been working with the University of Alberta's Canadian Rail Research Laboratory to further strengthen the methodology.

Responsible Care®

Responsible Care® is an ongoing performance improvement initiative established by the Chemistry Industry Association of Canada (CIAC) and the American Chemistry Council (ACC). CN has been a proud partner in Responsible Care® since 1998, committing itself to continuous improvement in the areas of environment, health, safety and security (EHSS).

Following outstanding audit results, CN received recertification in Responsible Care in 2015.



AskRail™ Mobile Application

Developed by the Association of American Railroads, of which CN is a member, the AskRail™ mobile app lets emergency responders – the only parties eligible to use the application – view railcar content through a simple search, and also view railway emergency contact information and reference resources to support incident response.

Launched in the spring of 2015, more than 1,600 first responders, fire fighters and police officers in Canada and the United States had downloaded the app by the end of the year.

AskRail provides relevant information to emergency responders at the outset of an incident, which helps them make better informed decisions about how to respond effectively to a rail emergency.

In 2015:

- CN continued to use its integrated system audits to measure safety culture. The Company's follow-up audit process continued to ensure the actions recommended in the integrated audit were completed and effective.
- Supervisors performed nearly 428,000 efficiency tests and observations of operational activities in 2015. This represents more than 1,000 tests per day, which supports compliance with safety practices, policies and operating rules. Test results are documented in the centralized Performance Monitoring and Rules Compliance (PMRC) database.

Supervisors performed over

428,000

efficiency tests and observations of operational activities in 2015.

Safety Audits

CN conducts three levels of safety audits.

- **Integrated system audits** assess compliance with CN's Safety Management System as well as with operating rules and safety culture.
- **Regional/functional audits** assess compliance with a Region or Function's safety action plans. These types of focused audits may include walkabouts or technical audits of an engineering or mechanical issue.
- **Local audits** occur on a daily or weekly basis and focus on rules compliance through efficiency testing and observations.

Risk Assessment

Risk assessments allow CN employees to understand the potential safety hazards of railroad activities so they can prevent or minimize the risk of injury or accident. CN conducts risk assessments in a systematic and structured manner prior to changes in operations and to address activities that may pose significant risk. Field Level Risk Assessments are conducted during specific activities in the field, such as the installation of track and ties.

In 2015:

- All regions increased their sharing of safety information, including best practices and action plans for safety. There are nearly 190 risk assessments on CNiNet to review and learn from.
- CN continues to update its Safety and Regulatory Affairs website to provide users in the field with important safety information more easily and efficiently.

Technology and Investment



“CN’s significant capital program is designed to raise network efficiency, support long-term growth and further strengthen safety.”

JIM VENA

Executive Vice-President and Chief Operating Officer

For 2016, CN is again planning a significant capital program with approximately C\$2.9 billion in rail infrastructure and equipment to raise network efficiency, support long-term growth and further strengthen safety. CN plans to spend approximately C\$1.5 billion on track infrastructure, to maintain a highly efficient and safe network. This work will include the replacement of rail, ties, and other track materials, bridge improvements, and targeted branch line upgrades.

CN also uses a wide range of technologies to monitor the condition of track and rolling stock in order to proactively minimize risks. Our industry-leading wayside detection assets are driving opportunities to improve service, safety and reliability.

CN’s technology working group assembles representatives of all functions in the Company to look for new lines of defense for our network. The work of the group creates a unified vision for CN’s technology investment and deployment, ensuring we invest selectively in new technology and explore external connections with other Class I railroads, research facilities, suppliers and railways. In 2015, CN stepped up its external engagement, conducting deep dive sessions and benchmarking with railroads, suppliers and universities.

CN has announced a special program to acquire additional monitoring equipment to enhance its strong technological base for early detection of defects. The program is an outcome of CN’s corridor risk assessments and will supplement CN’s ongoing investments in technology. In 2016, CN will invest about C\$28 million in new safety technologies that will include:

- 14 new Wayside Inspection Systems that detect hot bearings, hot wheels and dragging equipment
- 17 Dragging Equipment Detectors
- 21 Signaled Sidings on key corridors that carry the highest traffic levels to alert crews and dispatchers to potential broken rail incidents
- A Truck Hunting Detector to prevent derailments, excessive rail wear and damage to truck components
- 10 hi-rail trucks that measure track geometry and identify exceptions that exceed CN thresholds
- A hi-rail truck equipped with track geometry testing and joint bar inspection system
- 10 Vertical Track Interaction Units that use accelerometers to identify areas of potential concern and reduce the risk of main-track accidents

“Mechanical Analytics for Rail Safety (MARS) and Engineering Reliability & Analytics (ERA) are two innovations that represent new lines of defense for our network.”

JIM VENA

Executive Vice-President and Chief Operating Officer

- Centralized Traffic Control (CTC) signalling technology on the Rainy Subdivision in northern Minnesota, completing CTC application on all of CN’s core main lines
- Two Ultrasonic Rail Flaw Detection Units to locate rail defects that would not be visually detectable
- Predictive analytics and data management initiatives to assess mechanical trends and allow for pre-emptive maintenance work to prevent failures and allow engineering forces to better understand track health and prioritize maintenance and capital programs
- Advanced machine vision imaging technology to detect rolling stock defects that are difficult to identify visually
- A drone technology unit for bridge and track inspection

Predictive Analytics and Data Management

CN’s investments in Predictive Data Analytics for our Engineering and Mechanical teams are another example of leveraging our strengths. The initiative involves using data from our industry-leading network of detectors and inspection technologies to take safety to the next level. Two programs are central to the effort:

Mechanical Analytics for Rail Safety (MARS)

- CN Mechanical and IT departments have teamed up on a major initiative that is now using existing car-related data to show operational and safety-related trends. This program is called Mechanical Analytics for Rail Safety (MARS). Data is being combined from Wayside Detectors, Car Repair Billing, On-line Train Stop records and service disruptions to find trends for car types, car series and individual cars. The information is a key initiative for determining preemptive action to prevent failures.
- Early findings have allowed CN Mechanical to take action on initiatives regarding car repair, retrofit, modification, truck hunting, coupler and draft components, air hose separations, side bearing application policy and car structures.
- The MARS initiative has also created a more integrated and flexible database query system so that Mechanical staff investigators are not limited by legacy databases in pursuit of data to drive preventive action plans.

Engineering Reliability & Analytics (ERA)

- CN Engineering is working closely with IT on an innovative initiative that helps field users visualize track condition and better prioritize their work. The system consolidates historical repair and upgrade records, and combines that information with data from existing and new test equipment, including the TEST cars, the autonomous track geometry measuring system, ultrasonic rail flaw detectors, the optical track inspection system, joint bar inspection vehicles and the tie rating technology system. All of this information allows CN to objectively rate the relative health of the track across the system.



- The system provides users with both operational and planning views. The operational view uses a map-based interface with GPS tracking to assist local forces in locating conditions identified through visual and automated inspection. This allows them to conduct trend analysis for proactive management and evaluation of track health.
- The planning view provides easy-to-use reports for understanding track health and developing capital programs. It also allows for review of historical geometry data while working in the field.

Engineering

Technology

Ultrasonic Rail Flaw Detections

Rail flaw detection systems are designed to catch internal rail defects that could potentially lead to broken rails.

- CN tested over 220,000 miles of track in 2015. It expects to test approximately 210,000 miles in 2016 using a risk-based approach. Testing frequency remains in excess of regulatory requirements throughout the system.
- CN tested over 11,500 miles of non-mainline track in 2015 and expects to test approximately the same number of miles of non-mainline track in 2016.

TEST Car

A valuable tool for the inspection of track curvature, alignment and cross-level of rail lines across the network. CN Engineering forces use the real-time reports to address any track irregularities and to plan long-term rail replacement programs.

- CN tested over 80,000 miles of track in 2015 and expects to test 82,500 miles of track in 2016.
- Late in 2015, CN began commissioning of a new autonomous track geometry system (ATGMS) car. This system is expected to start collecting and processing data in late 2016. The ATGMS car is designed to operate on any freight train and will allow for additional geometry inspections of CN's network.

Optical Track Inspection System

This system uses state-of-the-art technology to capture detailed images of the track from the TEST car. The images facilitate the review of components such as tie plates, tie fasteners, joint bars and bolts.

- CN will commission its first Optical Track Inspection System on the TEST car in April 2016.

Deployable Gauge Restraint Measurement System

This system applies a mechanical load to the head of the rail to simulate a loaded gauge measurement. This technology has the ability to find areas of missing or broken fasteners that may not be visible during a hi-rail inspection trip.

- CN commissioned its first Deployable Gauge Restraint Measurement System as part of the new TEST consist in 2015. The system will be fully operational over the entire system in 2016.



Hi-Rail Geometry and Joint Bar Inspection Vehicles

- In 2015, CN purchased and installed six light geometry track inspection systems on engineering vehicles. The inspection vehicles are utilized for additional geometry inspections between TEST car inspections, and for training less experienced employees. CN plans to purchase 10 additional light geometry inspection systems in 2016.
- In 2015, CN purchased two geometry and joint bar inspection vehicles that are capable of detecting missing bolts and cracks in joint bars. These trucks also have the ability to conduct light geometry inspections.
- CN plans to purchase a third light geometry/joint bar inspection vehicle in 2016 to expand coverage in each region.

New Rail and Track Ties

CN continues to use head repair welds to remove certain rail defects found by the Ultrasonic Rail Flaw Detection car. The technology allows replacement of a portion of defective rail head without cutting the rail. This saves time, reduces the potential for track buckles and saves money on welding plug rails.

- CN eliminated nearly 82,000 rail joints across the system in 2015. Rail joints are created when a short segment of rail is replaced to remove a defect found via rail flaw detection or visual inspection. Dynamic loads at rail joints lead to premature wear on track and rolling stock. CN expects to eliminate between 82,000 to 85,000 joints in 2016.
- In 2015, CN laid down nearly 500 track miles of new rail and almost 80 track miles of partially worn rail on the main line and in yards.
- CN installed nearly 1.9 million new wood ties and over 60,000 concrete ties across the system in 2015.

- In 2016, CN plans to install over 600 track miles of new rail and 100 track miles of partly worn rail. The Company will also be replacing approximately 2 million wood track ties and over 50,000 concrete ties.
- CN surfaced over 9,000 miles of track in 2015 and expects to surface between 9,500 and 9,800 track miles in 2016.

Rail Grinding

In addition to maintaining the rail's profile and controlling surface defects, rail grinding provides greater reliability of information to the ultrasonic rail flaw detection equipment while testing.

- CN ground over 19,350 pass miles of rail in 2015 and expects to grind over 20,500 miles in 2016.

Engineering

Equipment

Precision Engineering

Precision Engineering is a major initiative to consolidate many separate engineering processes into a single information system.

Engineering vehicles are equipped with laptop computers running the Precision Engineering application. The system enables employees to access and input critical information in real time, such as plant condition, the completion of inspections and exceptions found. The end result is improved quality and execution of engineering inspections and repairs. Senior managers are provided with oversight to ensure regulatory and Company requirements are being met.

- CN enhanced a mobile user interface to capture data pertaining to activities related to Continuous Welded Rail and welding. Work was also done to integrate the Track Information System (TIS) with similar systems used by the Signals and Bridge departments to report weekly crossing and culvert inspections.

- The first stage of an electronic Engineering Dashboard was completed to provide the status of regulatory track inspections. An Engineering data analytics project also got off the ground to provide visual reference for track exceptions.
- Additional functionality to the system is planned for 2016, including capital planning and the ability to better assess the track health across CN's network.

Vehicle Track Interaction Unit (V/TI)

This is an initiative to reduce the risk of main track accidents. An accelerometer is mounted on a locomotive and identifies unusual movements or accelerations resulting from track geometry and rail joint issues. The technology produces e-mail alerts to engineering forces when exceptions occur.

- CN has 21 locomotives currently equipped with V/TI technology, and plans to purchase 10 additional units in 2016.

Ground Penetrating Radar (GPR)

This technology is used to provide detailed assessments of ballast and subgrade conditions. The data collected by these systems can be used to better identify potential problem areas and plan undercutting programs.

- In 2016, CN will continue to collect data to assess the best long-term GPR solution for the company.

Tie Rating Technology (TRT) System

The TRT system is a new technology at CN. Equipped with 3D measurement capability, the system more accurately assesses track tie conditions in an objective manner. The software analyzes the surface of ties and identifies the size, length, and location of cracks and splits.

- The images and data collected by TRT can be used to pinpoint locations that need monitoring and for capital tie planning purposes. CN believes this system enhances operational safety.

- The TRT system was installed on the CN-1057 TEST car in July 2015 and will be used in 2016 to collect tie data across the CN system.

Positive Train Control

Positive Train Control (PTC) is a system for monitoring and controlling train movements to provide increased safety. In particular, PTC is designed to automatically stop or slow a train in the event of train-to-train collisions, excessive speed, unauthorized entry onto restricted sections of track, and movement of a train through a switch left in the wrong position.

The US Rail Safety Improvement Act of 2008 requires Class I railroads to install PTC systems on track segments that carry passenger traffic or toxic-by-inhalation (TIH) materials and have an average annual traffic threshold of 5 million gross tons (MGT). The deadline for full compliance is December 31, 2020.

- In 2015, CN continued to work with the Association of American Railroads, vendors, regulators, and other Class I railroads to implement PTC on required track segments in compliance with the US Rail Safety Improvement Act. PTC is one of the most technologically complex initiatives the railway industry has ever undertaken. It requires the construction of infrastructure, training of employees, equipping of locomotives, and the testing of new technology.
- In 2016, CN will continue testing PTC on pilot subdivisions. In total, CN expects to install PTC on approximately 3,563 route miles of track and 856 locomotives by 2020.

Broken Rail Protection

- CN extends track circuitry through designated sidings to provide a warning of a broken rail. In 2015, CN installed signal equipment on 12 dark sidings (where no signals exist) to protect against derailments.
- In 2016, CN will be installing broken rail protection on an additional 21 sidings.





Rail Bridge Safety

Bridges represent a vital component of our network infrastructure. Like all railways, CN is highly motivated to keep these structures safe. We cannot serve our customers and move North America's freight without efficient, safe bridges.

CN rail bridges vary from single timber 12-foot spans over streams in fields across the Midwest and Prairies, to structures spanning more than a mile over some of the continent's largest rivers. They are all inspected, maintained and, as necessary, repaired or rebuilt by a qualified workforce led by designated CN bridge engineers in accordance with federal regulations and CN's Bridge Management Program.

- Since 2012, CN has invested \$440 million in capital spending to repair, upgrade or replace bridges.
- CN has close to 500 employees dedicated to bridge inspections, maintenance and construction.
- 36 certified, full-time CN bridge inspectors perform more than 7,500 comprehensive inspections per year.
- CN uses supplemental inspection technology to keep its bridges safe. It owns/leases six bridge inspection vehicles specially equipped to allow safe access to large bridges. These snooper inspection vehicles access above and below the bridge deck. The fleet averages over 1,000 days of service annually.
- CN has been collaborating with universities and engineering firms in the development and testing of drone technology to supplement bridge inspections.

Mechanical

Equipment Locomotives

Fleet renewal helps CN to improve the safety and reliability of its motive power and enhance customer service, as well as reduce fuel consumption and exhaust emissions.

- In 2015, CN added 90 new mainline locomotives using Alternating Current (AC) traction motors to its fleet, part of the Company's multi-year locomotive renewal program aimed at continuously increasing fuel efficiency, improving service reliability for customers, and reducing greenhouse gas emissions. The AC traction motors provide significantly better rail adhesion for pulling heavier and longer trains on steep grades. Three AC locomotives can pull the same number of cars as four DC locomotives. They comply with stringent EPA Tier 4 and Tier 3 emissions rule standards and have Dynamic Brake capability at very low speed.
- CN will target more than C\$450 million in 2016 for the acquisition of locomotives, Intermodal equipment and vehicles as well as locomotive and car refurbishments. CN expects to take delivery of 90 more new high-horsepower AC locomotives in 2016, which will conform to the latest EPA Tier 4 emission rule levels.
- In 2015, CN continued testing with liquefied natural gas (LNG) fuel on two 4300-HP freight locomotives. These tests were designed to explore the practicality and assess the value of this fuel technology to daily operations. The evaluation includes the processes of delivery, refuelling, storage, and management of this cryogenic (ultra-low temperature) liquid.



Hot bearing detectors sense and report unsafe wheel bearing temperature levels on moving cars or locomotives. The information from the detectors is used to prevent derailments. CN scanned almost three billion car and locomotive roller bearings on its WIS network in 2015.

- CN continued to reduce WIS spacing to the CN standard of 12- to 15-mile intervals on core routes. In 2015, the Company added 45 new WIS locations and upgraded 46 locations across its network. As of December 2015, CN had over 980 WIS detectors on its system.
- In 2016, CN's program will include 14 new hot bearing detectors on key routes and key branch lines.

Wayside Inspection System (WIS): Hot Wheel Detectors

These detectors sense hot or warm wheels, which can create train delays and potential wheel tread damage, and reduce service life.

- CN continued to be proactive in identifying and repairing cars that recorded multiple hot or warm wheel readings from its over 668 hot wheel detectors.
- In 2015, CN performed over 48,000 single car air brake tests. The tests enable CN to diagnose air brake problems more accurately and to address service interruptions from stuck brakes. The Company implemented a new process to identify cars that have multiple occurrences of hot wheels.

Wayside Inspection System (WIS): Hot Bearing Detectors

CN has the densest and most advanced wayside detection technology in North America, which comprises various detectors that monitor the network for unsafe operating conditions for trains. CN has significantly increased that capability year over year.

Dragging Equipment Detectors

- In 2015, CN installed 24 new derailment detectors system-wide. In total, CN has over 400 standalone dragging equipment detectors, which are in addition to those that are already integrated with the over 980 WIS units.
- In 2016, CN will install detectors in an additional 17 locations to protect key structures and waterways.

Sharing Detector Data

- CN currently receives WILD impact data from about 170 WILD detectors from other Class I railroads in North America through the Association of American Railroads. The information provides advance notice of when a car is interchanged on CN's system. CN also receives foreign railway data for hunting detectors and acoustic bearing detectors.
- Processes are underway for the industry to share, in the future, further wayside detector data for bearings, brakes (cold and hot wheels), truck hunting, truck performance, wheel dimensions, automated vision inspections, etc.

Wheel Impact Load Detectors (WILDs)

WILDs detect wheels that have surface flat spots and other imperfections that can lead to broken components or broken rails. CN uses the information provided by WILD sites to help assess wheel replacement or maintenance needs. CN has the largest and most dense network of WILDs in North America.

- In 2015, CN continued to work closely with the Association of American Railroads' research arm to develop and test practical and effective new wayside detectors for identifying broken or cracked wheels. The work is being conducted in collaboration with other Class I railroads and potential equipment vendors worldwide.
- Also in 2015, CN installed a new Wheel Impact Load Detector on the Chicago-to-New Orleans corridor. The new location will enhance detection and will reduce issues from high impact wheels. CN currently has 41 WILDs across the system, the largest WILD network in North America.

Truck Hunting Detectors

These detectors help CN prevent derailments, excessive rail wear and damage to truck components. In addition, they provide alerts of excessive dynamic lateral oscillation at high speed. Car owners are then required to correct any truck conditions that led to the detection.

- In 2015, CN employed six Truck Hunting Detectors at four sites across Canada. These locations are in conjunction with existing WILD detectors.
- In 2016, CN will add one new Truck Hunting Detector in the Southern Region.
- CN is also connected, through AAR, with the alerts from over 80 Truck Hunting Detectors of other Class I railroads.

Overload and Imbalanced Load Detectors

CN uses its 41 WILD detectors to also provide timely weight-on-rail data.

- Alerts and alarms from the detectors identify cars that have been overloaded by the customer or that have unbalanced loads. CN has used the data to identify unsafe load conditions as well as help customers comply with car loading requirements.

Cold Wheel Detectors

These detectors help CN find cars with brake systems that are experiencing problems.

- CN has four cold wheel detectors located at the bottom of long grades where train brakes are applied for an extended period. By detecting wheel heat (or the lack of heat), the detectors allow for accurate assessments of car and train brake system health. CN is working with the Association of American Railroads and other Class I railroads on a test program to take hot and cold wheel detectors to the next level in identifying brake system integrity.

Wheel Dimension and Profile Detectors

Using laser-video and strobe-video technology, these detectors capture wheel profiles and wheel dimensions as the train passes over the sites at speeds of up to 65 miles (105 km) per hour. The technology allows CN to intercept worn or damaged wheels that need replacement.

- CN has two state-of-the-art laser and strobe video scanners. One site is in Western Canada, near Edmonton, and the newest on-line scan technology unit has been installed on the York Subdivision, east of Toronto.
- CN is also continuing work on a wheel wear notification system to enable it to proactively plan wheel removal.

Acoustic Bearing Detector

A technology that uses acoustic analysis for early detection of bearing flaws. The analysis is done in real-time and alerts are sent directly to a database which provides input and guidance to detector network monitoring staff in the Mechanical department around the clock for required action. The alerts provide accurate information as to the nature, severity and location of the fault.

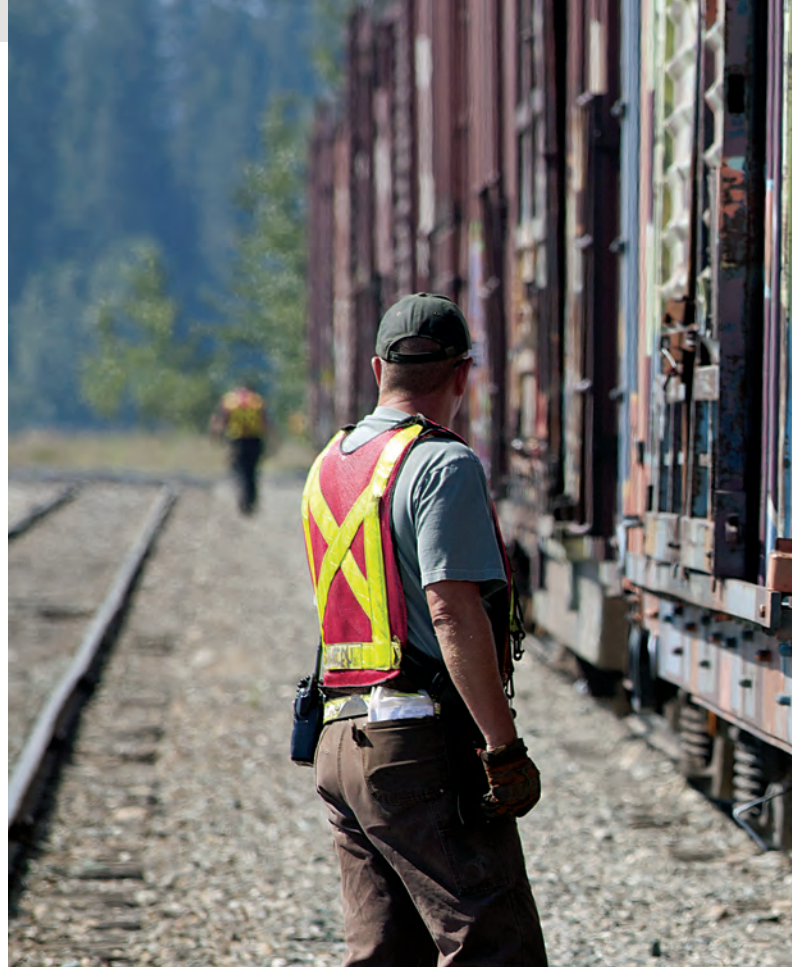
- CN receives alerts from acoustic bearing detectors industry-wide.

Roll-By Inspections

Roll-bys are effective at preventing problems on CN's main track, during "meets" of passing trains and as trains pass beside employees along a right-of-way. Between Winnipeg and Chicago, for example, a train can get approximately 30 roll-by inspections, providing many opportunities to detect and prevent mechanical problems.

During roll-by inspections, CN employees monitor a train and look for cars with shifted loads or dragging equipment, listen for unusual noise or try to detect the smell of hot bearings.

- Employees maintained an intense focus on roll-by inspections last year. CN implemented a training program for all Operating employees on how to perform these inspections, which included instructional videos that were posted on CN's safety and regulatory website.



- Roll-by inspections will continue to be a key area of activity in 2016.

Vision-Based Detection

CN has acquired a cutting edge vision-based detection system that can identify inadequate coupler securement while a train travels at speeds over 60 mph. The deficiencies are found in real-time and a picture is sent to Mechanical detector monitoring staff around the clock for any required action. CN Mechanical continues to work with the vendor to expand the capabilities of this new technology.

Hard Coupling

Using predicted velocities during humping operations, the speed at which cars couple can be derived. CN Mechanical teamed up with Signals & Communications and IT to develop a process to identify cars that have impacted at higher than desired speeds. CN Mechanical then performs a structured inspection, ensuring the cars are safe and ready for another trip.



Transportation

Initiative **Distributed Power**

With Distributed Power (DP), a locomotive can be placed along the length of a freight train and remotely controlled from the lead locomotive. DP technology improves braking performance, train handling and fuel efficiency. It also reduces the likelihood of sticking brakes and eventual damaged wheels.

CN continues to expand the use of the DP “Asynchronous” mode feature that allows for the head-end and remote locomotives to be controlled independently with different throttle and/or dynamic brake settings. This form of independent train handling control provides enhanced management of in-train forces on challenging terrain.

- At the end of 2015, CN had 680 locomotives in CN’s fleet equipped with Distributed Power – representing 49 per cent of CN’s high horsepower mainline locomotives.
- In 2016, 90 new AC locomotives will be added to the DP fleet.

Also, CN continues to leverage last year’s addition of 10 new LOCOTROL Distributed Braking Containers (DBC) as part of the “Taking on Winter” campaign. The DBC equipment can be placed on the tail-end or within the body of a train, and serves as a supplemental source of pressurized air to assist in maintaining efficient and safe train air brake operations under winter operating conditions.

Trip Optimizer

CN has made a substantial investment in Trip Optimizer technology, an energy management system that accurately regulates the speed of a train by automatically controlling locomotive throttle or dynamic brake. The system acts like an intelligent locomotive auto-pilot control system that processes real-time information on train position, terrain, train length and weight, speed limits, locomotive performance and braking ability, and continuously computes the most efficient manner to handle the train.

Trip Optimizer train control only requires the lead controlling locomotive to be equipped with a Trip Optimizer system. On trains operating with a Distributed Power configuration, the Trip Optimizer system will also independently control the remote locomotive group(s) as may be required to provide optimal handling of longer trains over difficult terrain.

“Every railcar that gets moved, every brake that gets applied and every container that gets loaded all have the potential to affect many lives – and that’s something all of us as railroaders need to remember as part of our personal commitment to safety.”

JIM VENA

Executive Vice-President and Chief Operating Officer

Beyond the environmental enhancement of reduced fuel consumption, Trip Optimizer provides consistent train handling by eliminating operator performance variability. As a result, in-train forces are managed in a predictable manner resulting in reduced likelihood of train separation or damage to customers’ goods, all of which improve safety and increase CN’s operational efficiency.

CN started using Trip Optimizer technology in 2010 and since then the system has evolved to incorporate several new features that have enhanced the safety of operations. As just one recent example, Trip Optimizer now also manages speed restrictions applicable to crude-by-rail “key” trains.

- At the end of 2015, Trip Optimizer was operational on almost 400 GE EVO locomotives – representing 28 percent of CN’s high horsepower mainline locomotives.
- In 2016, an additional 90 Trip Optimizer-equipped locomotives will be added to CN’s fleet.

Locomotive Digital Video Recorders, Wi-Tronix Technology

Locomotive digital video recorders (LDVR) capture the image in front of a train as it moves across the network. The information is paired with locomotive performance data from Wi-Tronix monitoring and communications technology. The resulting snapshot allows CN to monitor locomotive fleet performance anywhere in North America, provide timely response to issues and rapidly analyze causes of critical incidents.

- At the end of 2015, CN had over 1,220 LDVRs installed on locomotives. CN will add 90 additional LDVRs to locomotives in 2016.
- At the end of 2015, CN had over 1,500 Wi-Tronix units installed on locomotives. Authorized personnel can now remotely access the Wi-Tronix data via a website as well as through CN’s Right-Time Business Information System. The information is being used to support fuel conservation, safety monitoring, locomotive health monitoring and incident investigation.

- CN stores most of the information from the Wi-Tronix systems in its data warehouse. This data is cross-referenced with data from other Transportation and Mechanical systems and can be used to identify trends as well as opportunities for improvement.
- CN plans to add approximately 90 additional Wi-Tronix units to new locomotives in 2016.

Train Marshalling Rules

Train marshalling practices at CN provide a framework that allows large sized trains to be operated in an efficient and safe manner. Building on a strong foundation, CN will continue to progressively and methodically implement train marshalling rules across its network using industry best practices, data analysis and a risk-based approach.

- In 2015, CN maintained a strong focus on compliance with three key marshalling rules applicable to all Canadian mainline and certain secondary routes. Automated train marshalling support systems were also enhanced to facilitate better planning and make-up of trains at yards while also ensuring compliance with critical marshalling rules. Additionally, a key marshalling rule applicable to general merchandise trains operating on mainline tracks located in both CN’s Southern Ontario Zone and the entire Southern Region was successfully implemented in the fourth quarter of 2015 to enhance safety by better aligning cross-border marshalling practices.
- In 2016, the strong focus on moving freight traffic safely and efficiently will continue. CN will review, adapt, and further enhance its train marshalling strategy in order to continue to manage in-train forces and mitigate risk. Additionally, as part of the continued strengthening of CN’s safety culture, awareness of train marshalling rules will be reinforced through updated job aids, coaching, education and a detailed review of critical compliance issues.

2015 Champion Safety Awards

FRA injury ratio

Lowest ratio

Most improved ratio

Largest reduction in FRA injuries

System Work Equipment

System Work Equipment

Lake Division

FRA train accident ratio

Lowest ratio

Most improved ratio

Largest reduction in FRA accidents

Quebec Division

Lake Division

Edmonton Division

TSB train accident ratio

Lowest ratio

Most improved ratio

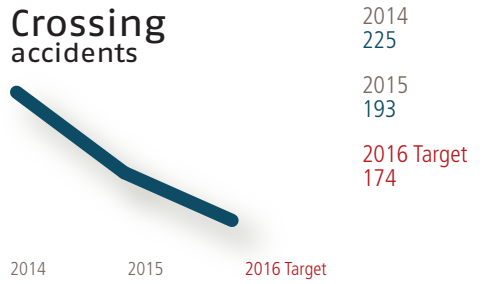
Largest reduction in TSB accidents

Eastern Ontario Division

Alberta Division

Edmonton Division





Safety metrics

Crossing Accidents

2015 results

- Conducted monthly enforcement initiatives at grade crossings, including joint operations with external agencies at high-incident locations.
- Continued association with safety organizations and partnership with CN Public Affairs and CN Police for Rail Safety Week 2015 and other initiatives focusing on crossing safety.
- Delivered safety presentations to high-risk groups and law enforcement agencies in communities across CN's network.
- Continued strategic use of equipment and technology to reduce risk at high-accident crossings.
- Fully engaged provincial, federal, and state officials in identifying and eliminating crossing hazards.
- Reviewed crossings system-wide to identify required upgrades or closure of specific crossings.





Key 2016 initiatives to reach targets

- Reduce grade crossing incidents across our network by identifying high-risk areas and conducting regular public enforcement and education initiatives to change behaviours.
- Engage key stakeholders, including law enforcement agencies, coroners, and medical examiners, in how to effectively deal with grade crossing incidents. Using the “Rail Incident Investigation Guidelines,” we will provide stakeholders with guidance in areas such as “rail safety while at the scene” as well as “obtaining pertinent rail-related information” when investigating a grade crossing incident.
- Continue to partner with CN Public Affairs, CN Police and other stakeholders to promote crossing safety. We will lead the industry with initiatives such as Rail Safety Week to educate the public and we will target high-risk groups, including young drivers and bus drivers, to change attitudes and behaviours.
- Identify the use of equipment and/or technology to reduce risks at high-incident grade crossings.
- Actively engage provincial, federal, and state officials in identifying and eliminating crossing hazards.
- Systematically review grade crossings across CN’s network and recommend upgrades or closures of specific sites.
- Monitor incidents across the network to identify trends and high-risk areas.



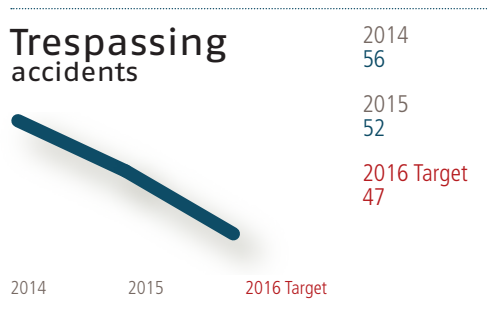
Safety metrics

36

Trespassing Accidents

2015 results

- Conducted monthly enforcement initiatives, including joint operations with external agencies at high-incident locations.
- Continued association with safety organizations and partnered with CN Public Affairs in Rail Safety Week 2015 and other initiatives focusing on trespassing – e.g., posting snowmobile and ATV safety announcements in local publications.
- Delivered safety presentations to high-risk groups and law enforcement agencies in communities across CN’s network.
- Strengthened employee awareness of the importance of reporting security concerns, threats or incidents on or near CN property through the “See Tracks? Think Train!” communications campaign.
- Analyzed incidents to focus resources and network on areas with a high-incident trespass rate.
- Expanded the posting of “No Trespassing” signs in high-incident locations.



Key 2016 initiatives to reach targets

- Conduct regular trespassing enforcement initiatives at high-incident locations, collaborating with other law enforcement agencies and local governments to reduce trespassing on CN’s right-of-way.
- Meet with key stakeholders, including law enforcement agencies, coroners, and medical examiners to effectively deal with trespassing incidents. Provide stakeholders with guidance in areas such as “rail safety while at the scene” as well as “obtaining pertinent rail-related information” when investigating a trespassing incident.
- Continue to partner with CN Public Affairs and other stakeholders to promote rail safety. We will lead the industry with initiatives such as Rail Safety Week to educate the public and we will target high-risk groups, including youth and snowmobile/ATV drivers, to change attitudes and behaviours.
- Strengthen employee awareness of the importance of reporting security concerns, threats or incidents on or near CN property through the “See Tracks? Think Train!” communications campaign.
- Monitor trespassing incidents across our network for trends and identify high-risk areas.





SAFETY POLICY STATEMENT



Safety is of the utmost importance to CN. All operations must be conducted safely, no matter how important or urgent. The Company is committed to safeguarding employees, the public, communities, customers, the environment, and our assets at all times.

CN is committed to being the safest Class I railway by supporting:

A culture

that promotes employee involvement and drives continuous improvement;

A work environment

in which risks are assessed and mitigated;

Work practices and training

that ensure safety is protected in all activities;

Empowered employees

who are committed to their personal safety, the safety of their fellow employees, and the communities in which we operate.

CN is committed to its Safety Management System, a formal framework for integrating safety into day-to-day railway operations, which applies to all Company employees, and is also used to govern CN's relationship with contractors and other stakeholders granted access to CN property.

CN cooperates with regulatory agencies and complies with all applicable regulations to maintain a safe, secure and healthy workplace.

All employees are responsible for performing duties in compliance with Company policies, rules and procedures. The Company is committed to providing the leadership, organization, training and resources necessary to maintain a safe, secure and healthy workplace.

Claude Mongeau
President and CEO

Jim Vena
*Executive Vice-President and
Chief Operating Officer*



Safety
Management
System
2015
Overview



The safety of CN's operations and of the communities through which it passes is of the utmost importance to the Company. It is for this reason that CN has developed and implemented a robust Safety Management System that is based on safety culture, effective safety processes and use of technology.

Transport Canada defines a Safety Management System (SMS) as a formal framework for managing risk. It makes safety part of day-to-day railway operations. An SMS helps companies manage the safety of their operations because it requires them to:

- Identify safety concerns, assess the level of risk they represent, and take steps to reduce those risks, where required.
- Build a safety culture into their day-to-day operations at all levels of the company.
- Involve company employees in the processes of the system; including by
 - collaborating or consulting with them;
 - keeping them informed of risks and how the company has dealt with them; and
 - developing a procedure for employees to report contraventions and safety hazards to the company and a policy for protecting employees who report.

The following provides an overview of CN's SMS, as aligned with each of the process areas stated in Transport Canada's new SMS-2015 regulation:

Process for accountability

To designate an executive who is responsible for the operations and activities of the Company to be accountable for the extent to which the Company meets regulatory requirements for SMS, including the effectiveness in achieving the highest level of safety in its railway operations

- CN's Chief Operating Officer (COO) has been designated the "Accountable Executive" and has signed the necessary declaration.
- Annual reports on SMS effectiveness are provided to the COO from various designated managers.

Process with respect to a safety policy

To create a policy that reflects the Company's commitment to promoting railway safety

- CN has a safety policy signed by its President and CEO and its COO. The policy clearly states that safety is of the utmost importance to CN and that CN is committed to being the safest Class I railway in North America.
- The safety policy is shared with all employees and is widely displayed throughout CN's facilities.
- CN's Safety Policy can be found on CN's corporate website.

Process for ensuring compliance with regulations, rules, and other instruments

To provide a framework for identifying legal obligations, monitoring changes to them, and verifying compliance with them

- CN's SMS is designed to meet or exceed regulatory requirements. Applicable regulatory requirements in areas such as operating rules, track and signal standards, equipment inspections and the Canada Labour Code are communicated to employees as part of their ongoing training and certification as well as through communication vehicles such as bulletins.
- CN exceeds the regulatory requirements in many areas, including rail flaw testing (regulations require up to 4/year; CN inspects up to 18/year), track geometry car testing (regulations require up to 3/year; CN inspects up to 7/year), its integrated Wayside Detection System (not a regulatory requirement) and its safety culture measurement process (not a regulatory requirement).
- Compliance with regulatory requirements is assessed on an ongoing basis through employee compliance monitoring using CN's PMRC process as well as various audit processes.

Process for managing railway occurrences

To establish procedures for reporting and reviewing railway occurrences

- CN requires that details of all accidents and injuries be entered into its recording and analysis system. All accidents and injuries are investigated and corrective action is identified through detailed analysis. Systematic detailed closeout reports are required for reportable accidents and injuries. A review of accidents and injuries takes place in weekly system, regional and functional safety calls.
- Corrective actions to address accident investigations are implemented with identification of responsible parties. These are recorded in the closeout report for the accident encompassing root cause, contributing factors and corrective actions. CN monitors the progress of these actions.

Process for identifying safety concerns

To conduct analyses to identify safety concerns, including trends or repetitive situations

- Safety issues and concerns are identified to CN management through employee communications such as hazard forms, health and safety committees, CN's Ombudsman and CN's Prevent Hotline (a joint venture with St. Mary's University), as well as through audits and trend analysis.
- Accident and injury records are also used for trend analysis reviews, which are used to implement further risk control strategies.
- CN has a wide variety of risk mitigation strategies for all aspects of its operation. These involve the use of People, Process, Technology and Investments.
- Examples of People-based initiatives include training initiatives and employee involvement initiatives that strengthen CN's safety culture. Examples of Process initiatives include CN's Safety Management Plan, emergency response, contractor safety, safety audits and risk assessments. Examples of technology include CN's integrated wayside information systems, which check for overheated bearings or wheels and high wheel impacts, mechanized track geometry and rail flaw testing, distributed power technology, that helps lower in-train forces, and risk-based train marshalling rules.
- Additional safety initiatives are continually being added through risk assessment, trend analysis and accident investigation.
- Additional detail on CN's People, Process and Technology and Investment initiatives can be found on CN's corporate website and in this Leadership in Safety brochure.



Risk assessment process

To conduct risk assessments to identify risks and required remedial action

- CN has a formal risk assessment process that is used to evaluate and classify risks, including those associated with significant changes in railway operations such as the opening of new yards and facilities, railway acquisitions, the introduction of new technology, significant changes in business (volumes or product) and changes in personal protective equipment. Special corridor route assessments are carried out to assess and reduce risk in locations such as those with high population, waterways or other environmental or topography characteristics. This process is enabling CN to reduce the risk of Dangerous Goods transportation by leveraging initiatives relating to Technology, as well as People, Process and Capital.
- Training is provided to employees tasked with performing risk assessments.

Process for implementing and evaluating remedial action

To ensure that the remedial action for treating an identified risk is implemented and that the effectiveness of the action is evaluated

- As part of CN’s risk assessment process, required remedial action is identified along with a specific plan for implementation that identifies responsible party and required date.
- The effectiveness of remedial action is monitored and revisions made as deemed necessary.

Process for establishing targets and developing initiatives

To establish targets and develop related initiatives to achieve those targets each calendar year

- CN produces annual safety performance targets for accidents and injuries at the system, regional, functional and territorial levels. These are approved by the railway’s

executive and are communicated to all employees. They are monitored on a daily basis.

- CN has reports that measure safety performance on a daily basis at all levels in the organization. CN uses a variety of modern technologies including focused mapping, interconnected data systems and trend analysis to review safety data so as to assess the safety performance of the railway at the system, regional, divisional and functional level. This encompasses leading and lagging indicators and includes items such as rule violations, defective rails or wheels, and track quality index reports.

Process for reporting contraventions and safety hazards

To provide a framework for employees to report contraventions and safety hazards without fear of reprisal for having reported

- CN has established a process using the railway’s Ombudsman to allow employees to report contraventions and safety hazards without fear of reprisal.
- Employees are also encouraged to report concerns to supervisors.

Process for managing knowledge

To ensure that employees and non-employees have the knowledge they need, and that employees have the skills and qualifications they need to carry out their duties or activities safely

- CN undertakes systematic technical training of all its operating employees as well as soft skill leadership training for its managers. CN has taken advantage of the unique opportunity offered by the large number of new employees recently joining the railway and has created its “CN Campus” program to enhance technical and leadership development training using modern training tools. This includes structured classroom and field training.

- CN's Access to Workplace Policy, e-RailSafe and Contractor Orientation programs also ensure that CN's contractors and other persons invited onto CN property have appropriate safety training.

Process with respect to scheduling

To apply the principles of fatigue science when scheduling the work of the employees who work certain schedules

- CN's Fatigue Management Plan for Train Crews spells out the many initiatives that CN has in place to help address fatigue.

Process for continual improvement of the SMS

To conduct internal monitoring and audit activities to monitor and evaluate the implementation and effectiveness of the SMS

- In addition to annual reviews of its SMS and the required process areas, CN ensures continual improvement of its SMS through various means.
- CN conducts three levels of safety audits. Integrated safety audits assess compliance with CN's SMS system as well as operating rules and safety culture. CN was the first railway to measure safety culture and has developed a unique assessment process that measures safety culture on a subjective and objective basis based on Leadership and Commitment, Two-Way Communication, Employee Involvement, Learning Culture and Just Culture.
- Regional/functional audits focus on safety blitzes, technical audits of operating rules compliance and compliance with track and equipment inspection requirements as well as engineering or mechanical issues throughout the year. Local audits include rules compliance tests and observations of operational activities, policies and procedures.

Outreach

In addition to the 12 process areas specifically referenced in Transport Canada's regulations, CN has added a 13th component to its SMS titled "Outreach." This provides a process for meeting regulators, customers and municipalities to review rail safety and discuss concerns. Of particular importance is CN's structured community engagement plan, which ensures that communities are engaged to support effective emergency planning and response at the local level.



Shrinking OUR ECO Footprint

Part of CN's commitment to sustainable resource management is to take necessary measures to prevent pollution, and conserve, recycle and rationally use the natural resources required for our operations. One of these measures is to minimize our impact of paper usage on the environment. Here is a glimpse of major savings we've made by switching to 100% recycled paper for this brochure.

The 2016 *Leadership in Safety* brochure saved:



10 trees



22,647 L (5,983 gal.) of water
65 days of average water
consumption per person in
the US



393 kg (866 lbs) of waste
8 waste containers



1,387 kg (3,058 lbs) CO₂
9,274 km (5,763 miles) driven




5 GJ
23,541 60W light bulbs for
one hour



3 kg (7 lbs) NO_x
emissions of one truck during
11 days

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**LOOKING
OUT FOR
EACH
OTHER**



Leadership in Safety
2016

