Transport Canada Transports Canada

Guideline for Remote Control Locomotive Operation

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INTRODUCTION

This guideline promotes industry best practices and provides federally regulated railways, and those providing services to railways, with guidance on the continued safe use of remote control locomotives (RCLs).

With RCL technology, the remote control operator (RCO) on the ground operates a locomotive with a hand-operated transmitter that sends signals to a microprocessor aboard the locomotive.

This guideline is informed by research done by Transport Canada (TC) from 2016 to 2018, which was presented to members of the Advisory Council on Railway Safety.

TC examined areas such as:

- qualification, training and experience
- mitigating measures to reduce the risk of accidents or incidents
- mainline operation
- train speed
- crew size

TC also:

- conducted industry site visits, observing operating procedures and training programs
- reviewed Transportation Safety Board occurrence data and United States regulatory requirements and guidance

It is not the intent of this guideline to compare the safety of RCL and conventional switching approaches. Indeed, many of the recommendations found here would equally apply to either method.

Building on current industry best practices, this guideline recommends that railways establish common standards in two key areas: training and qualification of employees, and RCL operation.

RESPONSIBILITY

Railway companies are responsible for ensuring they comply with legal requirements, and for the safety of their operations. For RCL operations, this includes complying with the *Canadian Rail Operating Rules* and *Railway Safety Management System Regulations, 2015* (SMS Regulations).

Railway operating practices have changed since the inception of RCL technology in the 1990s. These operating practices already reflect many of the recommended best practices outlined in this guideline.

SECTION 1 – EMPLOYEE TRAINING, QUALIFICATION and EXPERIENCE

The rail transportation sector is evolving. Like in many sectors, demographic trends and growth in demand for services are leading to a workforce with more new employees.

At the same time, the data shows that the proportion of accidents caused by human factors and actions is increasing, especially in non-main track scenarios. Together these factors make the current focus on employees all the more important.

The SMS Regulations require railways to ensure employees and others, such as contractors, have the knowledge and skills to carry out their duties or activities safely. The Regulations also require railways to use a process for identifying safety concerns, so actions can be taken to mitigate them (i.e., doing analyses to identify trends in incidents and occurrences). A company's safety management system (SMS) also provides for effective record-keeping of these practices.

Notwithstanding the regulatory requirements currently in place, and taking into account the training practices already being used by railways, TC recommends that railways maintain a formal standardized qualification program, including a graduated training system, for safe RCL operations.

TC also recommends the following.

1.1 Initial training/qualification

For the initial qualification of an RCO, TC recommends that railways:

- Establish key elements of classroom theory, practical hands-on training, and evaluation
    - Examples of the skills and knowledge employees should acquire include:
        - Locomotive and RCL equipment setup, testing and troubleshooting
        - RCL operation, air brake operation and train handling
        - An understanding of forces acting on the movement and train handling techniques in various weather conditions and grades
- Review the best practices across industry with respect to instruction time for classroom and practical hands-on training
- When requested by an employee, provide additional training for initial qualification
- Have a qualified person monitor RCO adherence to rules and company procedures, for a period of time after the RCO's initial qualification that ensures they have the necessary knowledge and skills
- Ensure that, regardless of the job, anyone operating an RCL meets the qualification standards

Additionally, railways should consider:

- Implementing RCL training and qualification programs separately from training for other occupational categories (e.g., conductor training)
- Establishing separate RCO qualification standards for yard and outside-of-yard operations ("outside of yard" includes main track, spurs and subdivision track)
- Ensuring an RCO operating an RCL outside of a yard is trained to have equivalent competencies as a locomotive engineer
- Establishing criteria, such as minimum experience of each crew member and amount of supervision required, for when less experienced RCOs may work together
    - Criteria should take into account the job position (conductor or assistant conductor), and whether the work is happening in a yard or outside of a yard

1.2 Refresher training and requalification

With respect to refresher training and re-qualification of RCOs, TC recommends that railways:

- Establish standards on theoretical and practical training, and evaluation when previously qualified RCOs return from extended leave
- Establish the timeframe, of no more than three years, when an RCO must be requalified
    - Railways must provide refresher training prior to requalification
- When requested by an employee, provide additional training for refresher or re-qualification

SECTION 2 – RCL OPERATION

Based on operating experience, and in response to incidents and occurrences, railways have put in place processes, procedures and technologies to make their RCL operations more efficient and safe.

2.1 Administrative and technological measures for complying with CROR 115

CROR 115 is a critical rule. It requires a crew to verify that the track they will use is clear before shoving equipment.

Two examples of administrative and technological measures designed to mitigate the risk of collisions and injuries in yards, and to ensure compliance with CROR 115:

- Point protection zones (PPZs)
- Remote control zones (Zones)

These measures are designed to ensure a train headed by an unmanned locomotive does not collide with other trains. These zones are specific locations and tracks. They are used to protect movements.

Railways must consistently use the safest methods to mitigate the risk of collisions and injuries. As such, TC recommends that railways:

- Establish common definitions and processes with respect to risk mitigation measures, such as PPZs or Zones, taking into account:
    - best practices for technology, including using technology as a secondary way to prevent incidents
    - administrative procedures, including how protection is provided and recorded
    - placement of zone signage
- Require an RCO to visually verify that the train is moving in the requested direction, on the correct track
- Establish a rail industry standard for a lockout/tagout procedure to secure an RCL, which would mitigate the risk of movement by an RCO who is unaware of mechanical and/or engineering employees working on or around an RCL
- Prohibit operating an operator control unit (OCU) while inside a moving motor vehicle as either a driver or passenger

2.2 Establishing operational parameters

Railways need to understand the parameters within which RCLs can be safely operated, and to ensure that employees can access this information. RCOs must be able to reference documentation, specific to their work location, which details RCL operating parameters for that location.

TC recommends that railways:

- Develop instructions, in collaboration with labour, and based on an assessment of risk, for all locations where RCLs are operated (including yards, spurs, subdivisions and main tracks)
    - Examples of parameters to use in the analysis:
        - grade at the location, in each direction of travel
        - locomotive axle count and horsepower
        - train length and tonnage
        - types of rail cars and equipment
        - method of complying with CROR 115
- Standardize RCL speed to a maximum of 15 mph, to reflect current operating practices
- Have procedures in place that guide employees to work safely in the event one of the two OCUs fails during a shift (for example, the RCO with the working OCU has direct sight of the other crew member)
    - Note: If this happens, the railway should use all reasonable means to immediately replace the inoperative OCU

- Have minimum standards for air to be used through every rail car outside of yards with RCL operation, regardless of the method of control
- Ensure RCLs outside of yards have features that allow the RCO to apply the air brakes while under tractive effort, to better allow them to control the RCL's movement

ASSOCIATED REGULATIONS and RULES

- *Railway Employee Qualification Standards Regulations*
- *Safety Management System Regulations*
- *Canadian Rail Operating Rules*
- *Railway Freight and Passenger Train Brake Inspection and Safety Rules*

GLOSSARY

The glossary is intended to help you understand this guideline. For the definition of these terms, as they may apply to individual rules or regulations made pursuant to the *Railway Safety Act*, please refer to the specific rule or regulation.

Conductor – When used in this guideline, refers to a railway employee or contractor governed by the *Canadian Rail Operating Rules*, doing the tasks of an assistant conductor, conductor, trainperson, yard person, yard foreperson or employee.

Employee – Conductor or other rail employee qualified under the *Canadian Railway Operating Rules*.

Operator control unit (OCU) – Portable device, worn by a remote control operator to control the movement of a remote control locomotive.

Maintrack – For this guideline, refers to an artery between yards in a railway system, including main line, subdivision track, sidings and spurs.

Remote control locomotive (RCL) – Locomotive equipment with remote control technology. An RCO may control its movement, from a place on the ground, in the general vicinity of the locomotive.

Remote control operator (RCO) – A railway employee who remotely controls an RCL using an operator control unit. May also be called a train conductor, assistant conductor, yardman, yard person, yard helper or employee.

Train – When used in this guideline, refers to a series of freight rail cars coupled together. May also refer to a transfer and/or movement.

Transfer – As per the *Canadian Rail Operating Rules*, an engine or locomotive with or without cars operating on main track at speeds not exceeding 15 MPH.

Yard – A series of connected parallel railway tracks used for sorting rail cars by destination and assembling trains. Large yards may have a control tower.