

Remote Control Locomotive Operations

Congressional Report Highlights

Railroad Safety Advisory Committee
May 18, 2006

Accident/Incident Rates

- Findings for 13 month period (12/1/03 through 12/31/04)
 - RCL vs. Conventional operations
 - RCL train accidents – 25% higher
 - Weighted accident data
 - RCL – 24.09/mysm
 - Conv – 24.52/mysm
 - RCL employee injuries – 20% lower
 - Caveat: Not able to normalize on work hour basis; desirable future capability

Note: The study shows that, when comparing all railroads, RCL operations result in more train accidents than conventional operations. This result, which is different than our preliminary finding, appears to be based on two factors:

First, because the larger data sample taken for the final report provided a more complete picture of comparisons and contrasts, FRA has introduced enhanced programming methodology to eliminate accidents involving through and local freight trains that derailed while entering or leaving a yard or industrial track.

(cont.)

Secondly, a closer look at the data indicate that approximately 85 percent of the yard switching miles were generated by only three (BNSF, CSX, and UP) of the 38 railroads evaluated. The accident rates for these three railroads for both types of operations is virtually identical.

The reason for the higher conventional accident rate is largely because the railroad that historically has had the lowest human factor train accident rate (NS) relies almost exclusively on conventional switching. Considering the high number of yard switching miles generated by NS and the low percentage of RCL operations, the total conventional accident rate will show higher. FRA believes that the weighted data is a better representation of the relative safety of the two modes of switching operations.

RCL Main Track Operations

- Recommended restrictions on moves subject to Part 232
 - Horsepower limitations
 - No more than 3000 hp distributed over 8 axles
 - Train size limitations (1000ft)
 - 15 mph maximum speed
 - No grades of 0.5% or greater for .25 miles or more

RCL Main Track Operations

- FRA open to restriction modifications
 - provided railroad shows movements can be conducted safely
 - Track profile considerations
 - Science (simulator runs) on in-train forces
 - Controlled oversight over operations

RCL Main Track Operations

- Training (Part 240)
 - Classroom - Same as conventional engineers
 - OJT - Minimum of 120 hours actual documented operating time
 - Existing operations, RCOs grandfathered

RCL Main Track Operations

- Future technology
 - At least one railroad is working on new technology development
 - FRA is included in the development stages
- Important considerations
 - Advance planning & control during implementation
 - RCL technology will not work everywhere

Operating RCOs Riding Cars

- At discretion of the RCOs

Remote Camera X'ing Protection

- RCL has not resulted in any adverse impacts on grade crossing safety
- Follow guidelines in report

RCL Signal System Integrity

- Four RCL systems were evaluated
 - Security generally evaluated as good, but future generations of equipment good incorporate enhanced features
 - Recommended access control to systems
 - Simple – beltpack numbering, login/logout procedures
 - Complex – smart cards or keys, biometrics, pin #s
 - Recommended future cryptology modification considerations

Human Factors Accidents

- Leading cause of all accidents
- Appears to be equal in both RCL and conventional operations
 - RCL events may be more severe due to loss of situational awareness (reduced feedback to operator)

Human Factor Causes

- Switch improperly lined
- Shoving movement, absence of employee on or at the leading end of movement
- Shoving movement, employee on or at the leading end of movement, but fails to control
- Switch previously run through
- Car left to foul

Fatalities

- RCL – 2
- Conventional – 2
- Average age – 42.5
- Average Service – 11 yrs

Actions Required By Railroads

- If conducting movements that require brake tests under Part 232:
 - Amend training program to address main track operations
 - RCOs operating now must also receive additional classroom training (track-train dynamics, air brake & train handling, etc.)
 - Develop train handling instructions for this equipment

Training New-Hires

- FRA is working with the AAR to develop a training program

Regulatory Follow-up

- Operating rules compliance issues to be addressed in Notice of Proposed Rulemaking
 - Both conventional and RCL
- Locomotive control systems, including RCL, to be addressed in Locomotive Standards RSAC
 - Design criteria for safety-critical systems, including human-machine interface;
 - Verification and validation of systems;
 - Configuration management

Regulatory Follow-up

Questions?

Comments?