XIX EXPORAIL 2020

Cancún, Q. Roo México
del 11 al 13 de febrero

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Regulatory Issues and New Technologies

Mechanical Seminar
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Regulatory Issues and New Technologies

Today's discussion: Accomplishing change in the US federal regulations by working with the Federal Railroad Administration to use technology to accomplish safety improvements

How does this affect railroads in Mexico? Performance-based regulations increase safety and efficiency, and provides opportunities to improve service, and perhaps increase market share.

AAR Regulatory Modernization
Technical Advisory Group

The Technical Advisory Group is made up of members of the AAR's Asset Health Strategic Initiative, plus AAR's economists and attorneys. Also:

1) Technical experts from railroads

2) Railinc for data-mining and car tracking capabilities

With added expertise from:

3) Equipment manufacturers

4) Opinion of AAR technical committees including Brake Systems Committee, Equipment Engineering Committee, & others

Most Mechanical Regulations are From the 1950's

Most regulations are very prescriptive.

Examples:

- Replace every ten years "regardless of condition"…..
- Each time a car is placed in a train……. Must be inspected
- Must inspect both sides of a train during a brake test
- Must inspect air brakes every 1,000 miles……

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Regulatory Issues and New Technologies

Sorting out what matters from what doesn't matter

- Focus on the desired end result = reduced derailments, reduced stopping distance, less failures and train stops, etc.
- Moving away from regulations that are time-based or event-based, and moving toward performance-based objectives
- Use the facts, science, and data of modern railroading
- Stop doing things that have no safety benefit
- Show the relative safety benefits, and how safety would be improved by doing things a different way

A Waiver to Test New Technology

Long-term goal:

Using new technology, obtain a permanent change in the regulations from prescriptive to performance-based.

Performance-based procedures using technology:

- Obtain a waiver to use technology to improve safety
- If possible, have the waiver reference AAR Rules and Standards. AAR and FRA have to agree on AAR standards
- AAR Rules and Standards can be updated easily; a federal regulation takes years to update.

Waivers = Making a “deal” with FRA

Think of making a deal, and shaking hands afterward. Here is an example:

Railroad to FRA: Look, we know what regulation X requires. But if you let us do things differently, we can achieve better results, and increase safety or at least we can assure you that safety will not be compromised. Here is a list of factual information to assure you that our proposal is safe and is in the public interest.

Waivers = Striking a "deal" with FRA

The other half of the deal in this example is:

FRA to railroad: Okay, we see your point, in part. But we are not about to let you run off willy-nilly and do what you please. After all, we are the regulator. However, if you do these things and take on these responsibilities, and furnish this information, you may skip all or part of what is required by regulation X.

- Things to do:
  - A, B, C, and D

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This Requires Negotiations and Trust

By asking for a waiver, we are making a deal with FRA. Here is what we need to do to uphold our part of the agreement:

- Do very well at a public hearing, be prepared. Have all the answers.
- Make sure employees are knowledgeable and are doing things correctly
- Do what we said we would do
- Keep records, be thorough, share information
- Place a high priority on living up to the waiver requirements
- Renew the waiver before it expires
- Challenges:
  - Operational change
  - People change

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AAR Regulatory Initiatives

Petitions for Rulemaking:

1) 24 Hours Off Air

2) Use an Electronic Air Brake Slip to Remove Restrictions for Pick-ups & Set-offs

3) Increase Train Mileage between Air Brake Inspections

Note: Many other important regulatory initiatives on the way

Most Common Mechanical Derailment Causes

Mechanical components that fail and cause derailments are difficult or impossible to find during walking inspections. The most common mechanical causes are:

- Broken or defective wheels
- Failed bearings
- Broken axles
- Coupler defects
- Truck components

Wayside detection systems examine these components while the train is moving at track speed.

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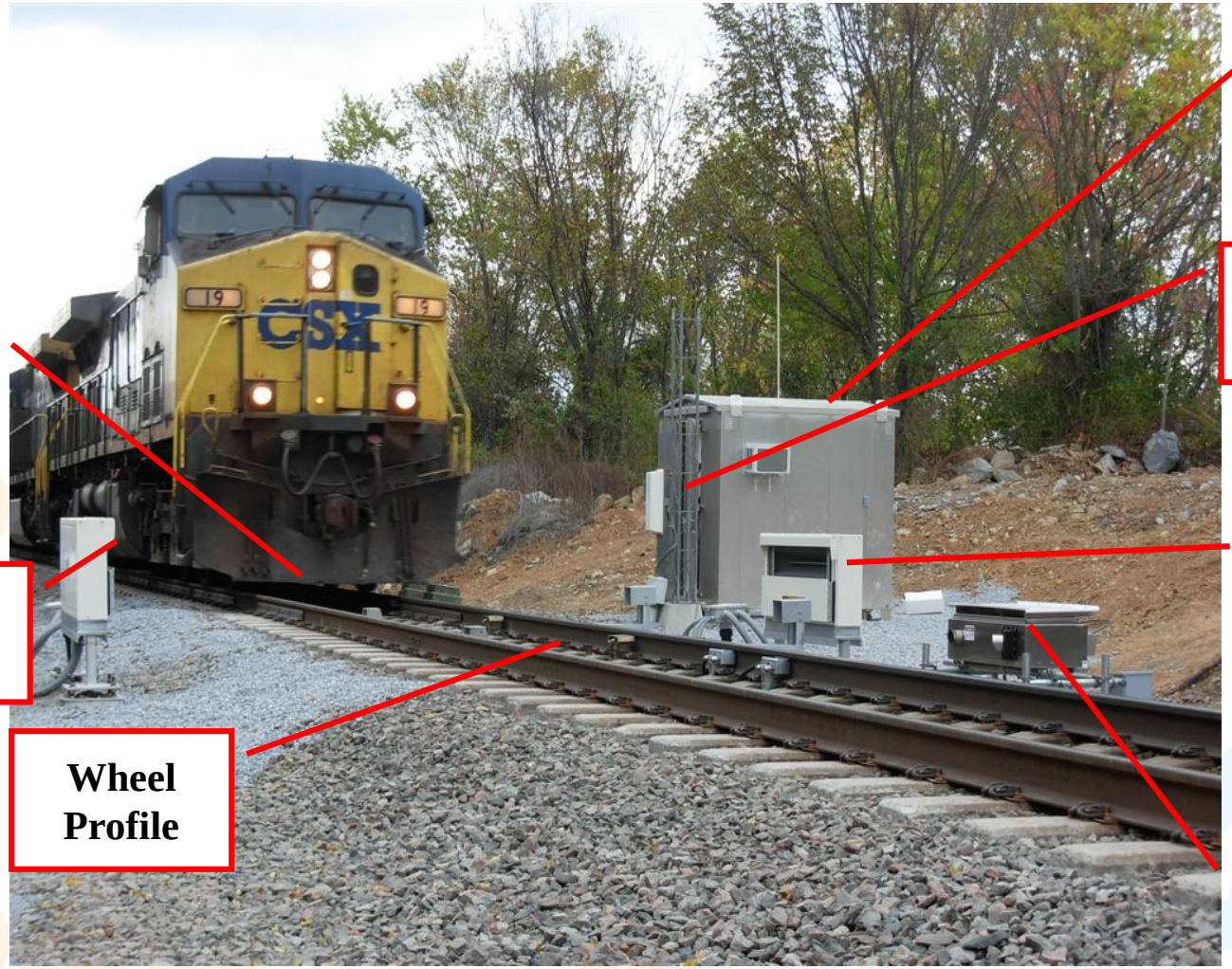
Supersites Have Co-Located Equipment



Hot Bearing

AEI

WILD & Hunting Truck

Acoustic

Acoustic

Wheel Profile

Optical Geometry

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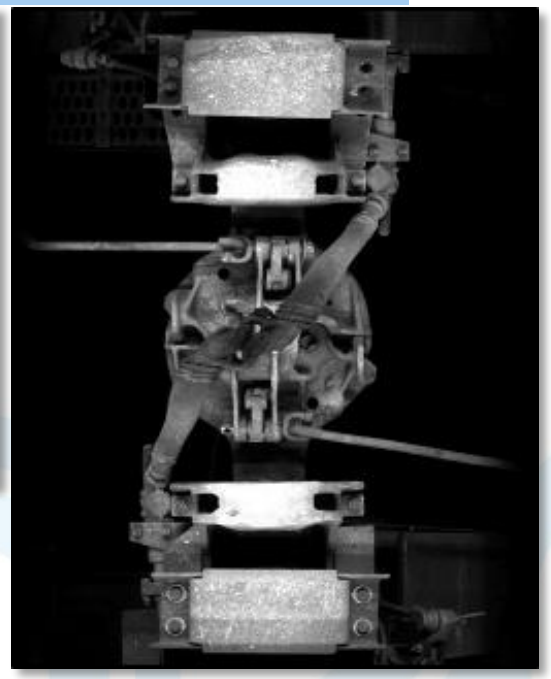
Machine Vision Railcar Inspection

Maximize Safety and Efficiency by Automating Equipment Inspections

Challenges

Reliable Detection Systems

Institutional and Regulatory Barriers to Implementations



- **End Products: New / Alternative Machine Vision Detection Systems Capable of Inspecting all Trains at all Times under all Weather Conditions**

Suspending a Regulation for the Purpose of Testing New Technology

The Code of Federal Regulations:

- Has a section that allows the FRA administrator to suspend a regulation if it is necessary for the purpose of testing new technology.
- Not a waiver, does not require a public hearing
- Had never been used before
- No previous administrator would allow it

Autonomous (Unmanned) Geometry Systems

- Autonomous testing involves a freight car, passenger car, or locomotive outfitted with a track geometry measurement system.
- The test vehicle can be operated in as a special test train, or as part of a revenue service train.
- Data is collected and processed autonomously on the vehicle; results are sent wirelessly to a server, and then sent to field maintenance people for follow-up.
- All class 1 railroads have (or soon will have), at least one autonomous track geometry vehicle.

Suspending a Regulation for the Purpose of Testing New Technology

BNSF petitioned the administrator to suspend the requirements for track inspection so that a geometry car could provide the track inspections:

- New technology for track inspections
- Labor promptly filed suit; FRA held up granting permission until the case was settled
- Labor lost their court case; the railroad was allowed to proceed
- Another railroad has since made a similar request

End goal:

A permanent change in the regulation from prescriptive to performance-based

New Technology Doesn't Have to be Rocket Science

New technology may simply be a better way to keep track of things, a better way to measure things, or a better strategy on how to use information

- Better ways of measuring or recording data
- Better ways to mine data, use data, strategies for improving safety
- Adaptation of existing technology for a new purpose
- Component tracking
- Must be auditable and FRA must have confidence in the data

Improvements Beyond Regulatory Requirements

Automated Single Car Air Test Data:

- Railinc is collaborating with the Brake Systems Committee
- Looking at UDE's, cold wheels, hot wheels, and other problems
- Better understand Automated Single Car Air Brake Tests
- Identify correlations between types of failures and SCABT results

AAR Strategic Research Initiatives Program

Strategic Research Initiatives Program (SRI) Addresses Current and Future Strategic Issues relating to the North American Rail Industry

Research Objectives:

- **Improve Safety** — Reduce track and equipment-related derailments through technology development
- **Improve Reliability** — Reduce or eliminate line-of-road failures
- **Improve Efficiency** — Increase productivity and reduce costs

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Are there any Questions?

Regulatory Modernization to Further Improve Safety

Thank You