PTC Collaboration Session
Fourth of Six in 2019 and 2020
February 5, 2020

To promote information-sharing, best practices, and collaboration between FRA and industry
Topics

• Industry’s Progress Toward Full Implementation as of Dec. 31, 2019
• Statutory and Regulatory Failure-related Reporting Requirements
• “Rerouting” Provisions Under FRA’s PTC Regulations
• PTC Safety Plan (PTCSP) Update
• Breakout Sessions (ACSES II, I-ETMS & ITC, and E-ATC)
High-level Overview of Industry’s Progress Toward Fully Implementing PTC Systems as of December 31, 2019
Progress Toward Full Implementation
As of December 31, 2019

• Status of Host Railroads’ PTC-governed Operations
  o As of December 31st, PTC systems were in operation or advanced testing (RSD) on over 55,600 (96%) of the almost 58,000 required route miles—a 4% increase from September 30, 2019
  o One (1) railroad commenced RSD in Q4 of 2019, and over ten (10) commuter railroads significantly increased the number of route miles in RSD
  o Two additional Class I railroads placed all subdivisions into PTC operations
  o FRA received three (3) PTC Safety Plans during Q4 and as of December 31, 2019, has ten (10) PTCSPs under review
Interoperability Continues to Progress
As of December 31, 2019

• Status of Interoperability
  o 38% of host-tenant relationships are interoperable (total 229)
    o Operational/Complete: 88 relationships
    o Testing: 83 relationships
    o Installing: 35 relationships
    o Not Started: 5 relationships
    o Not Reported: 18 relationships
  
o Interoperability achieved by host railroad type:
    o Class I Railroads: 48%
    o Intercity Passenger Rail: 19%
    o Commuter Railroads: 35.5%
    o Other Host Railroads: 11.5%
2020 ‘At-risk’ Criteria

- **Criteria:**
  - Expected date to submit PTC Safety Plan
  - Percentage of route miles governed by PTC (including RSD)
  - Severity of technical issues impacting testing and roll-out schedule
  - Percentage of interoperable tenant railroads

- **Measured:**
  - Quarterly (Q4 2019, Q1 2020, Q2 2020, then monthly)
  - Letters to railroads and governing bodies (for any commuter railroads)
  - List published when data is released
Recent Achievements & Priorities

• Recent Achievements:
  o FRA selected PTC Safety Plan contractors
  o ITC Mixed System PTC Safety Plan conditionally approved
  o Reduced turn-around time of submissions
  o Expanded testing support

• Priorities:
  o Approvals
  o Technical assistance and support
  o PTC Safety Plan reviews
  o Expanded engagement with at-risk railroads
Statutory and Regulatory Failure-related Reporting Requirements
Reporting of Various PTC System Failures

I. Permanent Regulatory Reporting Requirements

To ensure PTC system failures are properly communicated to all affected parties, FRA’s PTC regulations require coordination among, and reporting by, railroads, vendors, and suppliers, under 49 CFR §§ 236.1023, Errors and malfunctions, and 236.1029, PTC system use and failures.
I. Permanent Regulatory Reporting Requirements (Cont’d)

Example #1 – Post-PTC System Certification:

- **49 CFR § 236.1023(e)** – A railroad must notify FRA and the applicable vendor/supplier if:
  - The frequency of a safety-relevant hazard exceeds the thresholds in the railroad’s PTCSP, or
  - The safety-relevant hazard has not been previously identified in the appropriate risk analysis.

- See **49 CFR § 236.1023(f)** for reporting instructions (e.g., due w/i 15 days of discovery).
I. Permanent Regulatory Reporting Requirements (Cont’d)

Example #2 – Post-PTC System Certification:

- **49 CFR § 236.1023(k)** – A railroad must comply with the standard reporting requirements under 49 CFR part 233 if it experiences a failure of its PTC system resulting in a more favorable aspect than intended or other condition hazardous to the movement of a train.


  - Examples listed in FRA’s conditional PTC System Certifications:
    - Failure to enforce required braking applications and speed restrictions;
    - Overrun of an authority boundary due to late braking or an inaccurate braking algorithm; and
    - Authority sent by the dispatcher to the train crew, where such authority is either not promptly transmitted, not recorded, or erroneously modified by the system.
Example #3 – Post-full implementation of a PTC system:

- **49 CFR § 236.1029(h)** – After a railroad fully implements an FRA-certified and interoperable PTC system on its PTC-mandated main lines, the railroad must submit an annual report by April 16th regarding the PTC system failures that occurred during the prior calendar year. At a minimum, the report shall “identify failures by category, including but not limited to locomotive, wayside, communications, and back office system failures.”

- Voluntary Aspect – For consistency, the annual report could also include the same categorizations as under 49 U.S.C. § 20157(j)(4)—i.e., “initialization failures, cut outs, and malfunctions.”

- For railroads whose deadline for full PTC system implementation is December 31, 2020, the first annual failure report will be due **April 16, 2021**, and each April 16th thereafter.
II. Temporary Statutory Reporting Requirement

The temporary failure-related reporting requirement under 49 U.S.C. § 20157(j)(4):

- Applies only to FRA-certified PTC systems that are in operation, and
- Is effective from only October 29, 2015, until approximately December 31, 2021.

On December 30, 2019, FRA published a proposed framework for host railroads operating FRA-certified PTC systems to submit a Statutory Notification of PTC System Failures (Form FRA F 6180.177, OMB Control No. 2130-0553) to fulfill this statutory reporting requirement.

- The comment period is open until February 28, 2020, and then FRA will submit the information collection request to OMB for approval.
II. Temporary Statutory Reporting Requirement (Cont’d)

As the statute authorizes, FRA proposed to establish: (1) an alternative reporting location (instead of submitting the notifications to the appropriate FRA region), and (2) an alternative reporting deadline (instead of within 7 days of each occurrence).

Proposed Alternative Reporting Location:

- As industry requested, FRA proposed that the information would be submitted to FRA’s headquarters, using an **electronic, web-based form**, instead of notifying each applicable FRA region (i.e., the default under the statute).

- FRA is planning to enable railroads to upload bulk data using a CSV file (for example, an Excel spreadsheet saved as a CSV).
Reporting of Various PTC System Failures

II. Temporary Statutory Reporting Requirement (Cont’d)

Proposed Alternative Reporting Frequency / Deadline (Two-tiered Depending on Status):

- **Any Fully Implemented PTC Systems:** By the 15th of each month, a host railroad must submit a *monthly* notification of any PTC system initialization failures, cut outs, and malfunctions that occurred during the *prior* calendar month, if the host railroad has fully implemented an FRA-certified and interoperable PTC system on all its PTC-mandated main lines.

- **Any Other FRA-certified PTC Systems:** If a host railroad is operating an FRA-certified PTC system but is still in the process of fully implementing the PTC system on its required main lines, it must submit a failure-related notification on a *quarterly* basis, during the ongoing implementation process.
  - A host railroad must begin submitting monthly notifications (see above) immediately after it finishes fully implementing an FRA-certified and interoperable PTC system on all its PTC-mandated main lines.
II. Temporary Statutory Reporting Requirement (Cont’d)

Proposed Plain Meaning Definition of the Statutory Terms:

- **Failure to Initialize**: Any locomotive or train that departs the initial terminal without being governed by a PTC system (if required).

- **Cut Out**: Any cut out of a PTC system en route, including when the PTC system cuts out on its own or a person cuts out the system, unless the cut out was necessary to exit PTC-governed territory and enter non-PTC territory.

- **Malfunction**: Any failure of a PTC system, subsystem, or component that prevents, or could prevent, the PTC system from performing the functions mandated under 49 U.S.C. § 20157(i)(5) and 49 CFR part 236, subpart I.
II. Temporary Statutory Reporting Requirement (Cont’d)

Applicable Only to Host Railroads Operating FRA-certified PTC Systems:

• Consistent with industry’s feedback, FRA proposed that only host railroads subject to the statutory mandate would submit the Statutory Notification of PTC System Failures (Form FRA F 6180.177), and these notifications would encompass both a host railroad’s and its tenant railroads’ PTC system initialization failures, cut outs, and malfunctions that occurred during the reporting period.

• This approach would be consistent with the existing regulatory requirement specifying that a tenant railroad must report a PTC system failure or cut out to “a designated railroad officer of the host railroad as soon as safe and practicable.”
  
  o See 49 CFR § 236.1029(b)(4) (emphasis added).
Login Page

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Email Address

Password

Sign In

Need Access? Click Here.  Forgot Password? Click Here.
Pursuant to 49 U.S.C. § 20157(j)(4), each host railroad operating an FRA-certified PTC system must notify FRA—using this mandatory, web-based Form FRA F 6180.177—of any PTC system initialization failures, cut outs, and malfunctions that occur on its PTC-governed main lines, including those experienced by its tenant railroads. This statutory reporting requirement is temporary and expires on December 31, 2021.¹

Reporting Frequency and Due Dates:

- **Any Fully Implemented PTC Systems**: By the 15th of each month, a host railroad must submit a *monthly* notification of any PTC system initialization failures, cut outs, and malfunctions that occurred during the prior calendar month, if the host railroad has fully implemented an FRA-certified and interoperable PTC system on all its PTC-mandated main lines.²

- **Any Other FRA-certified PTC Systems**: If a host railroad is operating an FRA-certified PTC system but is still in the process of fully implementing the PTC system on its required main lines, it must submit a failure-related notification on a *quarterly* basis by the due dates in the following table, during the ongoing implementation process. A host railroad must begin submitting monthly notifications (see above) immediately after it finishes fully implementing an FRA-certified and interoperable PTC system on all its PTC-mandated main lines.

<table>
<thead>
<tr>
<th>Period</th>
<th>Coverage Period</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1</td>
<td>January 1 – March 31</td>
<td>April 30</td>
</tr>
<tr>
<td>Q2</td>
<td>April 1 – June 30</td>
<td>July 31</td>
</tr>
<tr>
<td>Q3</td>
<td>July 1 – September 30</td>
<td>October 31</td>
</tr>
<tr>
<td>Q4</td>
<td>October 1 – December 31</td>
<td>January 31</td>
</tr>
</tbody>
</table>

¹Specifically, 49 U.S.C. § 20157(j)(4) states that this temporary reporting requirement ends one year after the last Class I railroad obtains PTC System Certification from FRA and finishes fully implementing a PTC system on all its required main lines.

²For example, the notification regarding PTC system initialization failures, cut outs, and malfunctions during April 2020 would be due by May 15, 2020, for the subset of host railroads that have fully implemented an FRA-certified and interoperable PTC system as of that reporting period.

Public reporting burden for this information collection is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. According to the Paperwork Reduction Act of 1995, a federal agency may not conduct or sponsor, and a person is not required to respond to, nor shall a person be subject to a penalty for failure to comply with, a collection of information unless it displays a currently valid OMB control number. The valid OMB control number for this information collection is 2130-0553. All responses to this collection of information are mandatory. Send comments regarding this burden estimate or any other aspect of this collection, including suggestions for reducing this burden to OMB’s Office of Information and Regulatory Affairs, Attn: FRA OMB Desk Officer.
### Data Page (host railroad view)

#### Statutory Notification of Positive Train Control (PTC) System Failures

<table>
<thead>
<tr>
<th></th>
<th>Name of Host Railroad or Entity Subject to 49 U.S.C. § 20157(a):</th>
<th>Report Type:</th>
<th>Reporting Period:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>North County Transit District (SDNX)</td>
<td>Monthly</td>
<td>January 2020</td>
</tr>
</tbody>
</table>

**Safety Measure in Place:**

49 U.S.C. § 20157(j)(4) requires a railroad to provide in this notification “a description of the safety measures the affected railroad . . . has in place.”

En route failures per 49 CFR 236.1029 (b) were adopted in NCTD operating rules effective 4/23/18 (NCTD Time Table Special Instructions #4) and 06/03/19 (NCTD General Order #5)

#### Definitions for Types of Failures:

- **Failure to Initialize:** Any locomotive or train that departs the initial terminal without being governed by a PTC system.
- **Cut Out:** Any cut out of a PTC system en route, including when the PTC system cuts out on its own or a person cuts out the system, unless the cut out was necessary to exit PTC-governed territory and enter non-PTC territory.
- **Malfunction:** Any failure of a PTC system, subsystem, or component that prevents, or could prevent, the PTC system from performing the functions mandated under 49 U.S.C. § 20157(i)(5) and 49 CFR part 236, subpart I.

#### Railroads

<table>
<thead>
<tr>
<th>Host Railroad</th>
<th>Tenant Railroad</th>
</tr>
</thead>
<tbody>
<tr>
<td>North County Transit District (SDNX)</td>
<td>Amtrak (ATK)</td>
</tr>
<tr>
<td></td>
<td>BNSF Railway (BNSF)</td>
</tr>
<tr>
<td></td>
<td>Metrolink (SCAX)</td>
</tr>
<tr>
<td></td>
<td>Pacific Sun Railroad (PSRR)</td>
</tr>
</tbody>
</table>

#### Type of Failure Reportable Under 49 U.S.C. § 20157(j)(4):

- Failures to Initialize
- Cut Outs
- Malfunctions

#### Subdivision (As Reported in the Host Railroad’s PTC Implementation Plan (PTCIP)):

- San Diego

#### State Abbreviation (One Per Row):

- CA

#### Number of Failures During Reporting Period:

- 32
- 4
- 60

#### Percentage (Compared to All Operations on PTC-governed Main Lines):

- 1.9
- 0.03
- 3.5
Statutory Notification of Positive Train Control (PTC) System Failures
Form FRA F 6180.177
OMB Control No. 2130-0553

Data Page (tenant railroad view)

Name of Host Railroad or Entity Subject to 49 U.S.C. § 20157(a):
North County Transit District (SDNX)

Report Type:
Monthly

Reporting Period:
January 2020

Safety Measure in Place:
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• **Malfunction**: Any failure of a PTC system, subsystem, or component that prevents, or could prevent, the PTC system from performing the functions mandated under 49 U.S.C. § 20157(i)(5) and 49 CFR part 236, subpart I.

A host railroad’s PTCIP is the source for the list of its PTC-governed tenant railroads. If a PTC system is not yet governing a tenant railroad’s operations, check the box “PTC System Not Yet Governing Tenant Operations” and leave the failure entries empty. Only add failures and write “0” if a tenant railroad did not experience any failures of that type during the reporting period.

Name of Tenant Railroad:
Amtrak (ATK)

PTC System Not Yet Governing Tenant Operations:

Type of Failure Reportable Under 49 U.S.C. § 20157(j)(4):

<table>
<thead>
<tr>
<th>Subdivision (As Reported in the Host Railroad’s PTC Implementation Plan (PTCIP)):</th>
<th>State Abbreviation (One Per Row):</th>
<th>Number of Failures During Reporting Period:</th>
<th>Percentage (Compared to All Operations on PTC-governed Main Lines):</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Diego</td>
<td>CA</td>
<td>#</td>
<td>#</td>
</tr>
<tr>
<td>San Diego</td>
<td>CA</td>
<td>#</td>
<td>#</td>
</tr>
</tbody>
</table>

+ Add Tenant Railroad
+ Add Failure

Save Progress
Submit Form
Overview of Regulatory Temporary Rerouting Provisions
Rerouting Provisions | 49 CFR § 236.1005(g)–(k)

I. Emergency Rerouting

In the event of an emergency (e.g., derailment, flood, fire, tornado, hurricane, earthquake, etc.), a PTC-equipped train may be rerouted onto a track not equipped with a PTC system and/or a train not equipped with a PTC system may be rerouted onto a PTC-equipped track, if the following requirements are met:

• **Notification Requirement** – Within 1 business day of the beginning of the rerouting, the railroad must provide written (overnight mail or e-mail) or telephonic notification to the applicable Regional Administrator w/ the following information:
  - The dates that such temporary rerouting will occur, the # and types of trains that will be rerouted, the location of the affected tracks, and a description of the necessity for the rerouting.

• **When FRA Approval Is Not Required & When FRA Approval Is Required** – The rerouting may be in place only until the emergency ceases to exist AND may not exceed 14 consecutive calendar days (if so, no FRA approval is needed). If the rerouting will exceed 14 consecutive calendar days, the railroad must request and receive approval from FRA’s Associate Administrator for Railroad Safety before the 14-day period expires.
II. Rerouting Due to Planned Maintenance

In the event of planned maintenance, a PTC-equipped train may be rerouted onto a track not equipped with a PTC system and/or a train not equipped with a PTC system may be rerouted onto a PTC-equipped track, if the requirements under § 236.1005(g)(2) and/or (h)(2) are met:

• **FRA Approval Is Required But Whether at the Regional Level or by FRA’s Associate Administrator for Railroad Safety Depends on the Duration of the Rerouting**
  
  o If the period will **not exceed 30 days**, a request (in accordance with 49 CFR § 236.1005(i)) must be submitted to the **Regional Administrator** no fewer than 10 business days before the planned rerouting.

  o The rerouting request is generally “self-executing” (meaning it will automatically be considered permissible if not otherwise responded to), unless the Regional Administrator responds with a notice disapproving the request or provides instructions (e.g., requiring additional information to be provided), in which case no rerouting may occur until the Regional Administrator approves the request. 49 CFR § 236.1005(g)(2), (h)(1).
II. Rerouting Due to Planned Maintenance (Cont’d)

• If the period will exceed 30 consecutive calendar days, a request (in accordance with 49 CFR § 236.1005(i)) must be submitted to the Associate Administrator no fewer than 10 business days before the planned rerouting.

  o The rerouting shall not commence until the railroad receives approval from the Associate Administrator. 49 CFR § 236.1005(g)(2), (h)(2).

• Other Rule (Applies to All Rerouting Under 49 CFR § 236.1005(g)) – The railroad must comply with the applicable rerouting conditions under 49 CFR § 236.1005(j)—for example, the operating restrictions under § 236.1029 and/or certain operating rules.
PTC Safety Plan Update
PTC Safety Plans and FRA Certification Status
(Host Railroads Only as of December 31, 2019)

• Safety Plan & Certification Status
  o 13 Conditionally Certified Systems
  o 10 PTC Safety Plans under review
  o 18 PTC Safety Plans not yet submitted
    o I-ETMS: 13 Plans
    o ACSESII/ASESII: 2 Plans
    o E-ATC: 3 Plans

• Updates Expected
  o 2 I-ETMS resubmissions
  o ~3–8 RFAs

Certification Type
(49 CFR § 236.1015)
  o I-ETMS:
    o Non-vital Overlay 7
    o Mixed System 1
  o ACSESII/ASESII:
    o Vital Overlay 2
  o E-ATC:
    o Vital Overlay 1
  o ITC (Vital Overlay): 1
  o CBTC (Mixed System): 1
PTC Safety Plan Review Process

• 6 Stage Review Process *(timing estimate only)*
  - Completeness (1–2 weeks)
  - Quality (1–2 weeks)
  - Fatal Flaws (4–8 weeks)
    - Communicate with Railroad
    - Suspend Review (if necessary)
  - Detailed Review (2–3 months)
    - Variances
    - Baseline Documents
  - Railroad Meeting (1–4 weeks)
    - Questions & Clarifications
    - Plan Update
  - Final Determination (2–4 weeks)

• What Impacts Review Duration …
  - Use of baseline documentation
  - Use of already approved PTCSP as an example/template
  - Extent of type approval variances and quality of documentation supporting the variances
  - Accurate and detailed references
  - Validated assumptions and statements
  - Quality of and references to supporting test data
  - Timing of submission, including number of submissions under review
PTC Safety Plan Best Practice

• Considerations for PTC Safety Plan Preparation
  o Document all variances to type approval
  o Update hazard log and risk assessment based on:
    o Type Approval variances
    o Operational differences
    o Functional differences
    o Test data results
  o Update human factors analysis to reflect railroad operations
  o Provide references to baseline documents (if used)
  o Provide a ‘complete description’ rather than full documents where the Regulations allow
    o Note: some full documents are required, including hazard log, risk assessment, hazard mitigation analysis