

# ***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*

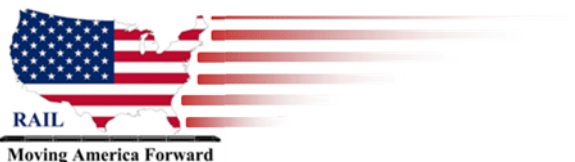


# Topics

- 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*

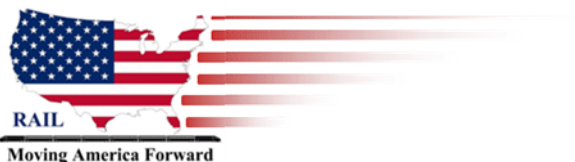


## ***Progress Toward Full Implementation***

*As of December 31, 2019*

### **• Status of Host Railroads' PTC-governed Operations**

- As of December 31<sup>st</sup>, 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
- One (1) railroad commenced RSD in Q4 of 2019, and over ten (10) commuter railroads significantly increased the number of route miles in RSD
- Two additional Class I railroads placed all subdivisions into PTC operations
- FRA received three (3) PTC Safety Plans during Q4 and as of December 31, 2019, has ten (10) PTCSPs under review

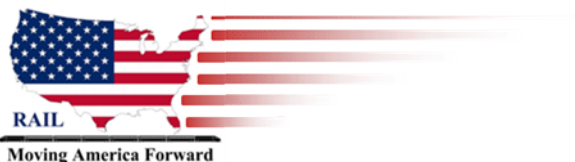


# *Interoperability Continues to Progress*

*As of December 31, 2019*

## • Status of Interoperability

- 38% of host-tenant relationships are interoperable (total 229)
  - Operational/Complete: 88 relationships
  - Testing: 83 relationships
  - Installing: 35 relationships
  - Not Started: 5 relationships
  - Not Reported: 18 relationships
  
- Interoperability achieved by host railroad type:
  - Class I Railroads: 48%
  - Intercity Passenger Rail: 19%
  - Commuter Railroads: 35.5%
  - 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:**

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

- **Priorities:**

- Approvals
- Technical assistance and support
- PTC Safety Plan reviews
- Expanded engagement with at-risk railroads



F E D E R A L R A I L R O A D A D M I N I S T R A T I O N

# *Statutory and Regulatory Failure-related Reporting Requirements*

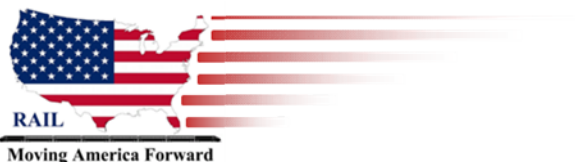




## ***Reporting of Various PTC System Failures***

### **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*.



## ***Reporting of Various PTC System 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).



## ***Reporting of Various PTC System Failures***

### **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.
  - 49 CFR §§ 233.5, *Accidents resulting from signal failure*, & 233.7, *Signal failure reports*
  - 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.



## *Reporting of Various PTC System Failures*

### I. Permanent Regulatory Reporting Requirements (Cont'd)

#### **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 16<sup>th</sup> 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 16<sup>th</sup> thereafter.



## ***Reporting of Various PTC System Failures***

### **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.

- See 84 Fed. Reg. 72121, 72123–26 (Dec. 30, 2019).
- The comment period is open until February 28, 2020, and then FRA will submit the information collection request to OMB for approval.



## *Reporting of Various PTC System Failures*

### 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 15<sup>th</sup> 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.



## *Reporting of Various PTC System Failures*

### 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.





## *Reporting of Various PTC System Failures*

### 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."
  - See 49 CFR § 236.1029(b)(4) (emphasis added).



# Login Page

Please Sign In

Sign In

[Need Access? Click Here.](#)

[Forgot Password? Click Here.](#)

# Landing Page

Form FRA F 6180.177  
OMB Control No. 2130-0553  
OMB Approval Granted XX/XX/XXXX  
OMB Approval Expires XX/XX/XXXX

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

[Click to go to form](#)

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.<sup>1</sup>

### Reporting Frequency and Due Dates:

- **Any Fully Implemented PTC Systems:** By the 15<sup>th</sup> 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.<sup>2</sup>
- **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.

Period	Coverage Period	Due Date
Q1	January 1 – March 31	April 30
Q2	April 1 – June 30	July 31
Q3	July 1 – September 30	October 31
Q4	October 1 – December 31	January 31

<sup>1</sup>Specifically, 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.

<sup>2</sup>For 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)

<b>Statutory Notification of Positive Train Control (PTC) System Failures</b> Form FRA F 6180.177 OMB Control No. 2130-0553	<b>Name of Host Railroad or Entity Subject to 49 U.S.C. § 20157(a):</b> <input type="text" value="North County Transit District (SDNX)"/>	<b>Report Type:</b> <input type="text" value="Monthly"/>	<b>Reporting Period:</b> <input type="text" value="January 2020"/>
	<b>Safety Measure in Place:</b> 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." <input type="text" value="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)"/>		

Railroads	
★ Host Railroad	North County Transit District (SDNX)
Tenant Railroad	Amtrak (ATK)
Tenant Railroad	BNSF Railway (BNSF)
Tenant Railroad	Metrolink (SCAX)
Tenant Railroad	Pacific Sun Railroad (PSRR)

**+ 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.

Upload Data from Template

Download Data Upload Template

<b>Type of Failure Reportable Under 49 U.S.C. § 20157(j)(4):</b> <input type="text" value=""/>	<b>Subdivision (As Reported in the Host Railroad's PTC Implementation Plan (PTCIP)):</b> <input type="text" value=""/>	<b>State Abbreviation (One Per Row):</b> <input type="text" value=""/>	<b>Number of Failures During Reporting Period:</b> <input type="text" value=""/>	<b>Percentage (Compared to All Operations on PTC-governed Main Lines):</b> <input type="text" value=""/>
---	---	---	---	---

+ Add Failure

Failures to Initialize	San Diego	CA	32	1.9	Remove
Cut Outs	San Diego	CA	4	0.03	Remove
Malfunctions	San Diego	CA	60	3.5	Remove

+ Add Tenant Railroad

Save Progress

Submit Form

# Data Page (tenant railroad view)

<b>Statutory Notification of Positive Train Control (PTC) System Failures</b> Form FRA F 6180.177 OMB Control No. 2130-0553	<b>Name of Host Railroad or Entity Subject to 49 U.S.C. § 20157(a):</b> <input type="text" value="North County Transit District (SDNX)"/>	<b>Report Type:</b> <input type="text" value="Monthly"/>	<b>Reporting Period:</b> <input type="text" value="January 2020"/>
	<b>Safety Measure in Place:</b> 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)		

Railroads	
★ Host Railroad	North County Transit District (SDNX)
Tenant Railroad	Amtrak (ATK)
Tenant Railroad	BNSF Railway (BNSF)
Tenant Railroad	Metrolink (SCAX)
Tenant Railroad	Pacific Sun Railroad (PSRR)

- + 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.

Upload Data from Template

Download Data Upload Template

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.

<b>Name of Tenant Railroad:</b> <input type="text" value="Amtrak (ATK)"/>	<b>PTC System Not Yet Governing Tenant Operations:</b> <input type="checkbox"/>
--	--

<b>Type of Failure Reportable Under 49 U.S.C. § 20157(j)(4):</b> <input type="text" value=""/> ▼	<b>Subdivision (As Reported in the Host Railroad's PTC Implementation Plan (PTCIP)):</b> <input type="text" value=""/>	<b>State Abbreviation (One Per Row):</b> <input type="text" value=""/>	<b>Number of Failures During Reporting Period:</b> <input type="text" value=""/>	<b>Percentage (Compared to All Operations on PTC-governed Main Lines):</b> <input type="text" value=""/>
---	---	---	---	---

+ Add Tenant Railroad

+ Add Failure

Save Progress

Submit Form

Failures to Initialize	San Diego	CA	#	#	Remove
Cut Outs	San Diego	CA	#	#	Remove

F E D E R A L R A I L R O A D A D M I N I S T R A T I O N

# *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.



## ***Rerouting Provisions | 49 CFR § 236.1005(g)–(k)***

### **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***
  - **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.
  - 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).





## ***Rerouting Provisions | 49 CFR § 236.1005(g)–(k)***

### **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.
    - 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.



F E D E R A L R A I L R O A D A D M I N I S T R A T I O N

# *PTC Safety Plan Update*



## ***PTC Safety Plans and FRA Certification Status (Host Railroads Only as of December 31, 2019)***

### • **Safety Plan & Certification Status**

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



<b><i>Certification Type</i></b> <i>(49 CFR § 236.1015)</i>	
○ I-ETMS:	
○ Non-vital Overlay	7
○ Mixed System	1
○ ACSESII/ASESII:	
○ Vital Overlay	2
○ E-ATC:	
○ Vital Overlay	1
○ ITC (Vital Overlay):	1
○ CBTC (Mixed System):	1

### • **Updates Expected**

- 2 I-ETMS resubmissions
- ~3–8 RFAs



## ***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**

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

