HB 2603 Train Delay Study and Report

September 15, 2020

Oregon Department of Transportation

Table of Contents

Terms and Acronyms

A Report – Amtrak Status Report

MT – Main Track

Non-fitter – Over-length trains that are too long to fit in most track sidings

SAIPRC – State-Amtrak Intercity Passenger Rail Committee

Saw-by – A maneuver that requires the longer train to continue moving and be able to exit the opposite end of the passing facility so that its rear car can clear the switch where the freight train entered the facility. This move only occurs when a train is too long to fit in the passing siding that is provided.

Sidings – Auxiliary tracks ranging from one to two miles in length adjacent to mainline tracks that expressly exist for trains to pass each other by switching off the mainline and onto the siding

SPRC – State Passenger Rail Coalition

SWAIN - A controlled siding on the Brooklyn Subdivision, 0.7-mile south of Junction City

TFR – Train File Report

XFS – One of many internal Union Pacific Centralized Traffic Control point codes

XH3 – One of many internal Union Pacific Centralized Traffic Control point codes

Executive Summary

The 2019 Oregon State Legislature approved House Bill 2603 (HB 2603), which directs the Oregon Department of Transportation (ODOT) to study and identify root causes for passenger train delays in Oregon due to freight train interference (FTI) and passenger train interference (PTI). The purpose of the study is to better understand and document why passenger train delays are occurring in Oregon and to consider next steps to improve train delay reporting and minimize delays including those that are due to FTI and PTI.

FTI data is limited. Current federal legislation does not require railroads to capture these data in detail, and states do not have the authority to require it, making cooperation by Union Pacific (UP) and Amtrak voluntary. The lack of a federal requirement is reflected in limited reporting by Amtrak conductors, infrequent exchanges between UP and Amtrak, and also from Amtrak to ODOT. Some FTI incidents are simply not reported, and those that are reported often lack the detail necessary to fully understand the circumstances that created the delay.

Despite the current limitations, ODOT will continue its targeted work to ensure that Amtrak is providing thorough and accurate train delay reports as part of our strategy to improve on-time reliability. Below is a short list of our planned actions to improve reporting and further reduce train delays.

- Explore adding more stringent requirements for Amtrak to report instances of freight train interference in the next Amtrak Cascades service contract, effective July 1, 2021
- Work with partners to identify capacity improvements that will benefit schedule performance
- Explore negotiating a Modeling Agreement with Union Pacific that will timely assess beneficial value of capacity improvements under consideration, and evaluate the pros and cons of altering passenger train schedules

The information presented in this report highlights a great need for more transparency in delay reporting by UP and Amtrak. Using this study as evidence that more needs to be done, the Oregon State Legislature could advocate for national rules by asking the U.S. Congress to pass legislation requiring transparency from railroads in reporting the causes of FTI and PTI as the new metrics do not include delay reporting requirements.

Introduction and Purpose

Introduction

The 2019 Oregon State Legislature approved House Bill 2603 (HB 2603), which directs the Oregon Department of Transportation (ODOT) to study and identify root causes for passenger train delays in Oregon due to freight train interference (FTI) and passenger train interference (PTI). The purpose of the study is to better understand and document why passenger train delays are occurring in Oregon and to consider next steps to improve train delay reporting and minimize delays including those that are due to FTI and PTI.

In recent years, Amtrak passenger train delays due to FTI and PTI have increased in Oregon. Except for 14 miles of double track in Portland, passenger and freight trains share a single main track from Portland to the California state line and delays occur for multiple reasons. Some of the most common reasons include the following:

1. A passenger train arrives at a meeting point and is required to wait for the opposing train to arrive before proceeding. The passenger train can either utilize the main track or the passing track at the discretion of the train dispatcher;
2. An opposing freight train is longer than the provided siding track, resulting in what is called a "saw-by." A saw-by is a passing maneuver for two trains that requires the shorter passenger train to wait on the main track adjacent to the siding (between the two track switches) so that the longer freight train can continue moving on the siding and exit the opposite end of the passing track. The shorter train must wait until the rear car of the longer train clears the switch where the freight train entered the facility to allow the shorter train to proceed;
3. A passenger train overtakes a slower freight train going in the same direction and is delayed following the preceding train until reaching a siding where the passenger train can pass the slower train;
4. A passenger train overtakes a slower freight train going in the same direction that is longer than the provided siding, resulting in what is called a "reverse saw-by" or "back-saw." A reverse saw-by first requires the freight train to exit the far end of the passing facility until its rear end clears the entrance to the facility. The passenger

train can then proceed on the main track until its last car passes the switch between the main and siding tracks and stop on alongside the freight train. The freight train then backs up, reoccupying the mainline behind the passenger train, until the engine of the freight train clears the switch at the far end, allowing the passenger train to proceed ahead of the freight. Reverse saw-bys require communication and coordination between the train dispatcher and crews of both trains, and can be quite lengthy to execute; and

5. A mechanical problem or wayside detector actuation that requires a train to make an unanticipated stop between stations for inspection causing interference and delays.

Understanding the factors and scenarios causing delays due to FTI and PTI will help inform future investment decisions, such as funding for siding extensions, additional sidings, or double track construction.

Purpose

The purpose of this document is to better understand why passenger train delays are occurring in Oregon and to consider next steps to minimize delays, including those that are due to FTI and PTI, coordination between participating agencies, and needed investments to improve service and prevent future delays.

The sections below outline the study's method, describing the role that FRA metrics and standards play in the study's approach, and a summary of the data, information, and assessment associated with train delays, as required by HB 2603. Also included are next steps such as recommendations for improved coordination, data still needed for future decision-making, and potential future investments.

Background and Approach

Background

When the Passenger Rail Investment and Improvement Act (PRIIA) was signed into law on October 16, 2008, it included a provision to establish standards to measure performance and service quality of passenger trains. Consistent with the PRIIA statutory mandate, the

Federal Railroad Administration (FRA) and Amtrak finalized metrics and minimum standards for measuring on-time performance (OTP) in 2010 that sought to measure change in effective speed, percent on-time at the endpoint, and percent on-time at all stations served.[1] One notable goal that remains a high priority is that passenger trains should meet at least an 80% OTP level. However, the 2010 metrics and standards were subject to a legal challenge on the basis that Section 207 of PRIIA was unconstitutional. After protracted litigation, the U.S. Court of Appeals for the District of Columbia found that paragraph (d) of Section 207 was unconstitutional, and this holding had the effect of voiding in part the 2010 metrics and standards. Following additional litigation, that court also found that paragraphs (a) through (c) of Section 207 were constitutional and remained in effect. This decision became final on June 3, 2019 when the U.S. Supreme Court declined the Association of American Railroads' appeal of the ruling. As a result, in July 2019, FRA and Amtrak once again began the process of developing joint metrics and standards as required by Section 207(a) of PRIIA. On March 31, 2020 the FRA, in a Federal Register Notice of Proposed Rulemaking, published the new Metrics and Minimum Standards for Intercity Passenger Rail Service for public comment to be received on or before June 1, 2020. On April 30, 2020, the FRA conducted a 3-hour telephonic public hearing on the new metrics and standards. A transcript of the discussions was added afterward to the public docket of the proceeding. As of September 15, 2020, the FRA had not proposed a date for formal adoption of the new metrics described below.

On-Time Performance and Train Delay Metrics and Standards

OTP and Train Delay are the two key components of the new metrics and standards guided by Section 207 of PRIIA. The FRA proposes to add "Metrics and Minimum Standards for Intercity Passenger Train Operations" as new Part 273 of chapter II, subtitle B of title 49 Code of Federal Regulations. However, formal adoption of these rules cannot occur until after publication of the final rule in the Federal Register. This section provides a brief

---

1 https://railroads.dot.gov/sites/fra.dot.gov/files/fra_net/1511/Section_207_Metrics_and_Standards_2010-05-05_Final.pdf

overview of the federal guidance as proposed in the Notice of Proposed Rulemaking followed by a detailed description of the two new metrics pertinent to OTP.

49 C.F.R. § 24308(c) states that, except in an emergency, intercity and commuter rail passenger transportation provided by or for Amtrak has preference over freight transportation in using a rail line, junction, or crossing unless the Surface Transportation Board (STB) orders otherwise. This rule has been in effect for many years but is not always followed by the host railroad whose dispatchers controlling traffic can make decisions that are both contrary to the law, but justifiable from a practical, operational perspective (i.e., putting a passenger train into a siding to meet an over-length freight train can cause less delay than vice versa).

Section 207 of PRIIA required that FRA and Amtrak act jointly in consultation with the STB, rail carriers over whose lines Amtrak trains operate, and states to develop new or improved metrics and minimum standards for measuring performance and service quality of intercity passenger train operations.

Following are the proposed new metrics developed in accordance with Section 207 for OTP and train delays.

On-Time Performance

The customer OTP metric is the percentage of all customers on an intercity passenger rail train who arrive at their detraining point within 15 minutes of their published scheduled arrival time, reported by train and by route.

The customer OTP minimum standard is 80% for any two consecutive calendar quarters. This standard is provided in the ODOT-Amtrak operating agreement as a goal to achieve. If service quality of intercity passenger train operations for which minimum standards are established under Section 207 fails to meet the standards for two consecutive calendar quarters, the STB may initiate an investigation. An investigation may also be initiated upon a complaint by Amtrak, an intercity passenger rail operator, a host freight railroad over which Amtrak operates, or an entity for which Amtrak operates intercity passenger rail service, such as ODOT and Washington State Department of Transportation (WSDOT), joint sponsors of the Amtrak Cascades service.

PRIIA Section 213 also describes STB's authority to identify reasonable measures and make recommendations to improve service, quality, and OTP of the substandard train, and to award damages and prescribe other relief.

Train Delays

The train delays metric is the total minutes of delay for all Amtrak-responsible delays, host responsible delays, and third-party delays, for the host railroad territory within each route.

- **Train delays per 10,000 train miles** - the minutes of delay per 10,000 train miles for all Amtrak responsible and host-responsible delays, for the host railroad territory within each route
- **Train delays** - total minutes of delay for all Amtrak-responsible delays, host-responsible delays, and third party delays, for the host railroad territory within each route
- **Average minutes late per late customer** - the average minutes late customers arrive at their detraining stations, reported by route. This metric excludes on-time customers that arrive with 15 minutes of their scheduled time.

Adopting and enforcing the new metrics and standards as proposed in the Federal Register will improve OTP over the long-term. While they will not immediately resolve physical constraints such as freight trains exceeding siding lengths, they will more clearly reveal delay cause patterns and trends such as trains that are consistently running behind schedule and will provide data-based support to help Amtrak and host railroads mitigate delay causes. The newly developed OTP metrics and standards will measure how many passengers arrive at their destinations within 15 minutes of the scheduled arrival time and may result in redistribution of the recovery time built into some schedules.

The new metrics and standards will ultimately encourage Amtrak and the host railroads to improve both operations and OTP. Having one set of national standards by which to measure and guide performance is something both the industry and traveling public greatly need.

Delay Data

HB 2603 mandates the study cover a variety of reasons that could be causing FTI delay, or PTI delay – A through E below. Data received was analyzed to identify delay causes and gaps in delay reports. Key takeaways and recommendations to address data gaps have been identified for each section below. Refer to Appendix B for more detailed reporting information.

Gathering relevant train delay data and information relies heavily on the communication between Amtrak and ODOT. ODOT passenger rail program managers receive two reports from Amtrak every day: the Amtrak Status Report (the A Report) and the Train File Report (TFR). Both reports provide information and details about train delay events that impact Amtrak Cascades and *Coast Starlight* trains.

While ODOT receives daily train delay reports from Amtrak, informative data can be limited because Amtrak conductors may omit details essential to identifying factors that caused or contributed to the delay incident. Current federal legislation does not require railroads to provide these data, and states do not have the authority to require it, making cooperation by UP and Amtrak voluntary. Sometimes UP dispatchers will inform Amtrak conductors via radio of problems or events that are impeding the progress of the passenger train. Similarly, Amtrak crews can glean other details of delay-causing events from radio transmissions between the dispatcher and other trains in the area. Additional details can be obtained later from host railroad dispatching records by Amtrak management upon request, but this is only done when a delay incident triggers a desire for additional information.

Some of the data analyzed in this study was received from Amtrak and resulted from post-incident inquiries for additional facts. Inquiries of this nature can be initiated from one to several days after an event occurs. The process entails sending and receiving emails plus investigative time at the records retention location. Responses usually provide enough additional information to explain circumstances contributing to the delay that were not apparent in the initial report. Some delay instances mentioned in this report involve passenger trains running significantly behind schedule – out of slot – which can create delay to other passenger trains running on the system. Significantly late passenger trains also are at risk of encounters with freight trains that they otherwise would not normally see. These

particular delays were not recorded for this study. Appendix B provides a snapshot of the delay information that ODOT receives from Amtrak, as well as analysis and commentary about the data received.

A. Identify delays to passenger trains waiting for an opposing passenger or freight train to arrive at a siding selected by the train dispatcher for one of the trains to clear the mainline;

Takeaway

Generic reporting creates confusion. Reports received describe that delay times for Type A delays range from 4 to 21 minutes. While many factors can contribute to delay, typically delays of more than 4 minutes are good indicators of one or both of the following contributors: (1) The train being met was still in route to the meeting point; or (2) a saw-by meet ensued because of freight train length. While these instances indicate one of these possible factors, more detailed delay reports from Amtrak conductors are needed to provide certainty.

Recommendation

UP and Amtrak need to provide more accurate reporting to ODOT. The role of Amtrak conductors is unique because they create the only written record of delays that is available to ODOT. The ability for Amtrak and stakeholders like ODOT to develop solutions to reduce the amount of FTI relies heavily on a conductor's written report. If subtle details around what caused the delay are missed, addressing the problem can be challenging. For example, noting that a freight train was delayed because it actuated a detector would provide more clarity around the delay and help develop solutions to prevent such delays in the future.

Providing additional cause codes for freight train interference would be immensely helpful. ODOT could seek to negotiate these additions in their contractual operating agreement with Amtrak. Currently all freight train interference, no matter the length or causation, gets reported as FTI. As an example, a different cause code for reporting a delay caused by overtaking and following a slower freight train could be created. Similarly, a cause code could be created for reporting saw-by meets with non-fitter freight trains, and a different

code could be used when overtaking and passing a preceding non-fitter freight as this entails a time-consuming reverse saw-by as discussed below.

B. Identify delays to passenger trains resulting from overtaking a slower freight train going the same direction, including all delay time and mileage incurred following the slower train until passing;

Takeaway

Longer trains create system-wide challenges. Incidents of passenger trains overtaking and passing non-fitter freight trains through the reverse saw-by procedure are not uncommon and may become more prevalent as railroad companies seek to run longer freight trains. In every reverse saw-by example studied for this report the passenger train crew was briefed beforehand by the train dispatcher and was required to transport a member of the freight crew back to the head end of the freight train upon completion of the freight's back-up move. However, Amtrak conductors do not uniformly report this information on their delay reports, which makes it difficult for ODOT to identify when they occur. Of the various kinds of meeting and passing procedures, the reverse saw-by has the potential for creating the highest amount of delay.

Recommendation

Provide better reporting around saw-bys. To better understand the causes for reverse saw-bys, ODOT will work with Amtrak to reform delay report protocols to capture the time lost running on restrictive signals before stopping at the passing point, the amount of time consumed in the back-up movement, the time required to transport the freight crew back to the front of their train, and the departure time from the place of passing. Details of these events are crucial to determining potential time savings through investments in lengthening sidings and building sections of double main tracks.

C. Identify delays to passenger trains caused when an opposing freight train exceeds the length of a siding, resulting in a portion of the freight train still occupying the track required for the passenger train's progression;

Takeaway

ODOT needs better reporting on the frequency of non-fitter freight trains.

Recommendation

Understanding the frequency of non-fitter freight trains will provide ODOT with clearer next steps. The level of frequency might indicate better non-fitter train dispatching by UP or provide a rationale for engineering and investment for new or improved sidings to meet the needs of longer freight trains. ODOT can negotiate with Amtrak to have Amtrak employees record details of meets and passes involving non-fitter freight trains.

D. Identify passenger train delays arising from freight train mechanical failures;

Takeaway

A conductor's written report is the only system ODOT has for on-the-ground details. The role of Amtrak conductors is unique because they create the only written record of delays available to ODOT. The ability for Amtrak and stakeholders like ODOT to develop solutions to reduce the amount of FTI relies heavily on a conductor's written report. If subtle details around what caused the delay are missed, fixing the problem can be challenging. For example, if a freight train trips a detector causing delay to a passenger train, the Amtrak conductor should mention that fact in logging the incident on the delay report. Requiring this information can be stipulated through an operating agreement, providing more clarity around the delay and presenting an opportunity for a follow-up inquiry with the host railroad to obtain more information about what tripped the device. Identifying a problem could lead to the development of solutions to prevent such delays in the future.

Recommendation

Document mechanical failures in more detail. It is clear that mechanical failures can cause delays, but understanding what kind of mechanical failure occurred is critical. A conductor's

report should provide as much additional information about the incident as possible. If the delay resulted from an actuated detector, logging the location of the detector (listed by location and type in the host railroad timetable carried by Amtrak crews) helps to inform a follow-up inquiry to the host railroad.

E. List any other reasons for passenger delays not described in subsections (A) to (D) of this section.

Takeaway

Third party delays are a cause, but do not present a data gap issue. Delays unrelated to FTI or PTI, but that still involve Amtrak and UP operations also occur throughout the system, such as a train striking a vehicle, police or fire department actions, weather, and drawbridge openings. For these types of delays the reporting is very straightforward and they do not present a data gap issue; therefore, no recommendation is needed.

Findings and Recommendations

While the above findings reveal several instances of FTI, ODOT's record of all FTI cases is limited. The dearth of information stems from limited reporting required by Amtrak from its train conductors, infrequent information exchanges between UP and Amtrak, and also from Amtrak to ODOT. Some FTI incidents go unreported, and those that are reported often lack the details necessary to fully understand the circumstances that caused the delay. Legally requiring complete and consistent reporting that involves a host railroad will ultimately require the involvement of the STB or an act of Congress.

ODOT could better ensure that information is being recorded properly and shared with the state in several meaningful ways.

- **Clarify Needs** – ODOT will establish a standing monthly meeting with Amtrak about information needed and to clarify details from delay reports. The benefit of these meetings will help Amtrak coordinate with their train conductors as well as increase communication between Amtrak and UP staff. ODOT will use these meetings to aggressively coordinate with Amtrak to develop an agreement for

improving the capture and reporting of details pertaining to delays incurred by passenger trains.

- **Working with Partners for Scheduling Capacity Improvements** – ODOT and UP are discussing entering into a Modeling Agreement whereby UP will evaluate through sophisticated modeling the impact of passenger train schedule changes and the effect of infrastructure capacity improvements on the Oregon system's operation. UP and ODOT are developing shovel-ready capacity improvement projects to be eligible for federal grant opportunities.

  The cost and timing of both a Modeling Agreement and a Direct Service Agreement will be challenging, therefore regular quarterly meetings between UP and ODOT will be scheduled now to begin discussion of this partnership. Coordination with Washington State Department of Transportation and BNSF Railway will also be required to ensure that schedule changes are compatible with increasing ridership in both Oregon and Washington.

- **Establish Consistent Data Reporting Protocols** – ODOT will work with UP and Amtrak to establish consistent reporting protocols.
  - Through this effort, a minimum level of information required by Amtrak and UP will be established and Amtrak and UP will commit to work together to rectify miscommunication issues. ODOT will negotiate with Amtrak better OTP reporting in the Amtrak-ODOT Operating Agreement.
  - ODOT will work with Amtrak to broaden requirements for FTI and PTI incident reporting to include clearer details that will permit identification of the key types of FTI/PTI delays enumerated in this report. ODOT will negotiate with Amtrak enhanced reporting requirements that provide more detail to include in future ODOT operating agreements with Amtrak.
  - Amtrak's Train File Report (TFR) is the most valuable tool in ODOT's toolbox and strengthening the standards for reporting FTI and PTI to capture more incident details is the top priority. Amtrak's A Report is also useful for purposes other than tracking FTI and PTI although it often highlights in a news bulletin format particularly egregious examples of FTI and PTI for top management consumption. The A Report is issued daily in

PDF format and is approximately 50 pages in length, of which 75 percent is devoted to the eastern U.S. where the bulk of Amtrak operations occur.

- **Increase Siding Storage Capacity** – Freight non-fitter trains are a common occurrence and a common cause for FTI delay to passenger trains. Longer sidings would allow non-fitter trains to exit the mainline into a sufficiently-sized siding, thus avoiding the need for a saw-by maneuver to facilitate meeting or passing a passenger train.

  Consistent with the recommended actions in the Oregon Passenger Rail Corridor Investment Plan Draft Environmental Impact Statement,[2] and pursuant to ODOT leveraging future federal funding for intercity passenger rail improvements, ODOT will work with the FRA and UP to determine siding length needs and develop a prioritized incremental implementation plan to build new and longer sidings or segments of double main track to avoid costly and timely delays for both passenger and freight trains.

- **Coordination and Communication** – ODOT will continue to engage with the State Amtrak Intercity Passenger Rail Committee (SAIPRC) and States for Passenger Rail Coalition (SPRC), Amtrak, host railroads, and FRA to push for accountability in order to provide consistent OTP metrics and standards reporting.

  ODOT can use coordination and communication in these venues to pressure for more data and information. Once data are collected, rail stakeholders will need to be held accountable. Accountability can be accomplished through direction from FRA, STB, Amtrak agreements, and host rail agreements.

An adoption date for the proposed new OTP metrics and standards has not been set. The metrics were published in the Federal Register on March 31, 2020 for a written public

[2] https://www.oregonpassengerrail.org/files/library/documents/deis-publicdraft-cip-online.pdf

comment period that ended on June 1, 2020.[3] Oral comments were taken during a 3-hour telephonic public hearing on April 30, 2020. As part of the comment process, UP communicated to ODOT that they filed comments indicating schedules need to be adjusted to better accommodate sufficient run time for Amtrak passenger trains. UP also noted that currently, some passenger train schedules can be challenging to meet even without incidents of delays. ODOT anticipates improved OTP performance over the long term with the implementation of the new OTP metrics and standards.

[3]FRA, Metrics and Minimum Standards for Intercity Passenger Rail Service https://www.regulations.gov/docketBrowser?rpp=50&so=DESC&sb=postedDate&po=0&dct=PS&D=FRA-2019-0069.

Appendices

HB2603 Train Delay Study

Oregon Department of Transportation

80th OREGON LEGISLATIVE ASSEMBLY--2019 Regular Session

A-Engrossed
House Bill 2603

Ordered by the House April 2
Including House Amendments dated April 2

Sponsored by Representatives NATHANSON, GORSEK; Representatives BOSHART DAVIS, EVANS, GREENLICK, HOLVEY, LIVELY, NOBLE, PILUSO, POWER, SALINAS, SANCHEZ, WILDE, Senators GELSER, MANNING JR (Presession filed.)

SUMMARY

The following summary is not prepared by the sponsors of the measure and is not a part of the body thereof subject to consideration by the Legislative Assembly. It is an editor's brief statement of the essential features of the measure.

Directs Department of Transportation to study train delays **experienced by trains operated by Amtrak** and report on findings to interim committees of Legislative Assembly related to transportation on or before September 15, 2020.

Sunsets January 2, 2021.

A BILL FOR AN ACT

Relating to rail transportation.

Be It Enacted by the People of the State of Oregon:

SECTION 1. (1) The Department of Transportation shall study train delays experienced by trains in Oregon that are operated by the National Railroad Passenger Corporation, commonly known as Amtrak. As part of the study and to the extent possible, the department shall:

(a) Identify delays to passenger trains waiting for an opposing passenger or freight train to arrive at a siding selected by the train dispatcher for one of the trains to clear the main line;

(b) Identify delays to passenger trains resulting from overtaking a slower freight train going the same direction, including all delay time and mileage incurred following the slower train until passing;

(c) Identify delays to passenger trains caused when an opposing freight train exceeds the length of a siding, resulting in a portion of the freight train still occupying the track required for the passenger train's progression;

(d) Identify passenger train delays arising from freight train mechanical failures; and

(e) List any other reasons for passenger delays not described in paragraphs (a) to (d) of this subsection.

(2) The department shall present the results of the study, along with any recommended changes, in a report to the interim committees of the Legislative Assembly related to transportation in the manner provided under ORS 192.245 on or before September 15, 2020.

SECTION 2. Section 1 of this 2019 Act is repealed on January 2, 2021.

NOTE: Matter in **boldfaced** type in an amended section is new; matter [*italic and bracketed*] is existing law to be omitted. New sections are in **boldfaced** type.

Appendix B

A snapshot of the type of data that ODOT receives from Amtrak is provided below. ODOT passenger rail program managers receive two reports from Amtrak every day – the Amtrak Status Report (the A Report) and the Train File Report (TFR). Both reports provide information and details about train delay events that impact Amtrak Cascades and *Coast Starlight* trains.

Sections A through E below correspond with the delay reasons outlined in HB2603. The data, analysis, and commentary is provided as a representative sample of delay and gap information that is received.

A. Identify delays to passenger trains waiting for an opposing passenger or freight train to arrive at a siding selected by the train dispatcher for one of the trains to clear the mainline;

Data Received

TFR

Incident Code	Date	Train	Begin	End	Min of Delay	Host	Notes
A	1/7/2020	500	Salem	Oregon City	5	UP	Waiting to meet UP Train 8241 at siding at Hito
A	1/7/2020	505	Portland	Willsburg Jct.	9	UP	Waiting to meet Amtrak Train 508 at control point, Willsburg Junction
A	1/7/2020	508	Albany	Salem	19	UP	Waiting to meet UP 5385 at siding at Renard
A	1/7/2020	508	Oregon City	Portland	21	UP	Waiting to meet Amtrak Train 11 at siding at Clackamas
A	1/9/2020	508	Salem	Oregon City	7	UP	Waiting to meet UP 6693 at siding at Labish
A	1/9/2020	508	Salem	Oregon City	6	UP	Waiting to meet UP 7805, other at Hito
A	1/8/2020	11	Eugene	XFS	7	UP	Waiting to meet UP 2535, Milepost, 614.7, 614.7 at Natron
A	1/6/2020	14	XFS	Eugene	7	UP	Waiting to meet UP 8141 at Control Point Lookout
A	1/8/2020	11	Salem	Albany	10	UP	Waiting to meet Amtrak 14, Milepost,

							694.5, 694.5 in Millersburg
A	1/8/2020	11	Albany	Eugene	4	UP	Waiting to meet Amtrak 508, Milepost, 666.1, 666.1 in Alford
A	1/8/2020	14	Klamath Falls	Chemult	8	UP	Waiting to meet UP 6849, Milepost, 439.3, 439.3 in Algoma
A	1/8/2020	14	XH3	Portland	6	UP	Waiting to meet UP 6693, Milepost, 765.6, 765.6 at Johnson Creek, a control point 0.4 mile north of Willsburg Jct.
A	1/8/2020	14	XH3	Portland	5	UP	Waiting to meet Amtrak 11, Milepost, 751.9, 751.9 at Coalca
A	1/9/2020	508	Eugene	Albany	10	UP	Waiting to meet Amtrak 11, Other, SWAIN
A	1/9/2020	508	Salem	Oregon City	6	UP	Waiting to meet Amtrak 505, other at Coalca

A Report

5/22/2020 – 500 Delay[1]

- **'Train 500 (22) North of Albany, OR – Freight Interference:** 22MAY2020 Train 500(22) was delayed at Millersburg, MP/695 UPRR Brooklyn Subdivision, 4.1 miles north of Albany, meeting UP freight train MPDWC. Train 500(22) further delayed following UPRR freight MEUPD to Marion, MP/704.2. **Delay: 500(22) 49"'.** *[This account appeared in Amtrak's A Report issued May 23, 2020.]*
- The conductor's record of delay in the May 22nd TFR report received by ODOT read: '34" Meet. Red at Millersburg. Wait for UP 2540 to inspect train and clear in the siding. 15" Follow running on signals to Marion following UP 7935. UP 7935 siding, Marion.'
- **ODOT FTI Analysis Discussion:**
    - While the A Report incident summary reported 49 minutes of freight interference without further allocation, the conductor's delay report attributed 34 minutes to meeting the opposing train at Millersburg and 15 minutes following the preceding train to Marion, the next siding. The A Report account also omitted information about UP 2540 South's train inspection

[1] This delay incident also applies to sections B and C.

before clearing in Millersburg siding, which the conductor noted without further elaboration. It is possible that UP 2540 South activated the defective equipment detector approximately 1.8 miles north of the north switch of Millersburg, requiring it to stop and a crew member inspect for the alleged defect before continuing to Millersburg.

- It is also apparent that northbound freight train UP 7935 North (MEUPD) was standing on the mainline at Millersburg waiting to meet UP 2540 South. Passenger Train 500 then followed UP 7935 North to Marion, the next siding in direction of travel, where 500 was able to pass.
- This incident embodies three types of FTI:
  - A passenger train awaiting at the meeting point the arrival of an opposing freight train
  - Delay due to a mechanical defect detector activation
  - A passenger train following a slower preceding freight train to a passing point

Data Gap Analysis

The A Report and TFR provide important facts on delays. The TFR describes that delay time ranges from 4 to 21 minutes. While many factors can contribute to delay, typically delays of more than 4 minutes are good indicators of one or both of the following contributors: (1) The train being met was still in route to the meeting point; or (2) a saw-by meet ensued because of freight train length. While these instances indicate one of these possible factors, more detailed delay reports from Amtrak conductors are needed to provide certainty.

The role of Amtrak conductors is unique because they create the only written record of delays that's available to ODOT. The ability for Amtrak and stakeholders like ODOT to develop solutions to reduce the amount of FTI relies heavily on a conductor's written report. If subtle details around what caused the delay are missed, fixing the problem can be challenging. For example, noting that a freight train was delayed because it actuated a detector would provide more clarity around the delay and help develop solutions to prevent such delays in the future.

B. Identify delays to passenger trains resulting from overtaking a slower freight train going the same direction, including all delay time and mileage incurred following the slower train until passing;

Data Received

A Report

11/8/2019 – 511 Delay

- Train 511 being delayed at Johnson Creek/MP 765.6 UP Brooklyn Sub Acct FTI.
- Train further delayed from Salem to Albany due to FTI at Marion/MP 705 UP Brooklyn Sub.

Train now operating approximately 1 hour and 30 minutes late, following 2 freights which are to be placed into the siding at Millersburg/MP 696. Updates when available.

12/16/2019 – 505 Delay, Portland to Eugene

- Train 505 departed Portland 8 minutes late and was delayed 50 minutes at Clackamas awaiting a meet there with northbound Amtrak Cascades Train 508. Before arriving Clackamas, Train 508 was delayed 37 minutes at Hito waiting for UP 8006 South, a ZBRLC-16 that was 8,839 feet long. After being released from Clackamas, Train 505 was 54 minutes late leaving Oregon City and 57 minutes late departing Salem. Meanwhile, miles ahead of Train 505, UP 8006 South had stopped due to activating a wayside detector at MP 697.8 between Jefferson and Albany. While the freight crew made a walking inspection of their train and found no defects, Train 505 caught up behind them and stopped. After UP 8006 got moving again, Train 505 was forced to follow it to Eugene. As a result, Train 505 was 1 hour 53 minutes late leaving Albany and 2 hours 3 minutes late arriving Eugene. Altogether, UP 8006, which was too long to clear in any of the 12 sidings between Portland and Eugene, caused an aggregated 150 minutes of delay to Amtrak Cascades 505 and 508 on December 16th.

1/31/2020 – 500 Delay

- Train 500 was delayed 54 minutes following UP freight train UP 7958 between Albany, MP 690.9, UP Brooklyn Subdivision and Willsburg Junction, MP 765.2, a distance of 74 miles.
  - **Amtrak Response** – UP acknowledged the dispatching move that caused the delay. Train 500 began following UP 7958 at Alford and continued into Portland. The freight in this case was 7,686 feet long and would not fit at Shedd, Millersburg, or at any other location. UP 7958 was a northbound train heading from Los Angeles to Tacoma.
- **ODOT FTI Analysis Discussion** – Although the Amtrak official who responded to this inquiry asserted the UP train would not fit "anywhere else," its length was shorter than Hito siding, 8,011 feet, 7.4 miles north of Woodburn. If Hito siding was unoccupied and if Train 500 had been allowed to pass there, the distance necessary to follow the slower freight would have been reduced by 24 miles.

5/6/2020 – 14 (northbound Starlight) Delay

- Train 14 caught up to northbound freight UP 7836 and followed it from MP 572.8, southeast of Oakridge, to Oakridge MP 580.21, where Train 14 was able to pass the slower freight.
- Train 14 reported 29 minutes of delay as a result
- Two hours later, another northbound freight train, UP 2743, had just completed picking up additional cars at Millersburg, the controlled siding north of Albany. The

dispatcher asked UP 2743 what the length of the new train was, and the conductor said 7,649 feet - at the time Train 14 was approaching Albany.

- The dispatcher informed the freight crew that he would route their train down the mainline at Marion (the next siding beyond Millersburg), and instructed the conductor to detrain at the south switch of Marion siding if a reverse saw-by would be necessary for Train 14 to pass UP 2743.
- Although Marion siding is 7,708 feet between clear points, and the freight train should have just barely fit on the mainline between the siding switches, the dispatcher wisely foresaw the possibility that UP 2743 could have a "sleeper" or two and was longer than stated. A sleeper is an extra car in a train that isn't on the train's list and consequently its existence doesn't get computed into the train's length by train management software.
    - The chance for extra cars to be unknowingly present is greater in intermediate pickups assembled by local freight crews, such as happens at Millersburg, than for trains that are built in major yards.
- The dispatcher told UP 2743's crew that he would have Train 14 stop and pick up the conductor and transport him to the head end of his train at Marion.
- A short time later the dispatcher radioed Amtrak 14 and apprised its crew of the plan for Marion.
- **ODOT FTI Delay Discussion:**
    - It's uncertain if a reverse saw-by occurred. However, Train 14 logged 18 minutes of FTI getting around UP 2743 and the delay report included information that Train 14 did pick up the freight conductor and dropped him off at the head end of his train. The Amtrak conductor did not indicate whether the freight had to back up which, if it did, ODOT would appreciate if Amtrak would emphasize the importance of noting with its conductors. To ODOT, 18 minutes seems rather long if the freight was clear of the switch circuits at both ends of the siding, and it was merely a momentary stop to entrain the conductor and detrain him 1½ miles later.
    - Because the record reflects 18 minutes, it suggests a very short back-up movement by the freight was necessary to clear the circuitry at the north end of Marion to allow Train 14 to exit with a clear signal. Never-the-less, the event details are incomplete.

5/22/2020 – 500 Delay[2]

- **'Train 500 (22) North of Albany, OR – Freight Interference:** 22MAY2020 Train 500(22) was delayed at Millersburg, MP/695 UPRR Brooklyn Subdivision, 4.1 miles north of Albany, meeting UP freight train MPDWC. Train 500(22) further delayed following UPRR freight MEUPD to Marion, MP/704.2. **Delay: 500(22) 49"'.** *[This account appeared in Amtrak's A Report issued May 23, 2020.]*

[2] This delay incident also applies to sections A and C.

- The conductor's record of delay in the May 22nd TFR report received by ODOT read: '34" Meet. Red at Millersburg. Wait for UP 2540 to inspect train and clear in the siding. 15" Follow running on signals to Marion following UP 7935. UP 7935 siding, Marion.'
- **ODOT FTI Analysis Discussion:**
    - While the A Report incident summary reported 49 minutes of freight interference without further allocation, the conductor's delay report attributed 34 minutes to meeting the opposing train at Millersburg and 15 minutes following the preceding train to Marion, the next siding. The A Report account also omitted information about UP 2540 South's train inspection before clearing in Millersburg siding, which the conductor noted without further elaboration. It is probable that UP 2540 South activated the defective equipment detector approximately 1.8 miles north of the north switch of Millersburg, requiring it to stop and a crew member inspect for the alleged defect before continuing to Millersburg.
    - It is also apparent that northbound freight train UP 7935 North (MEUPD) was standing on the mainline at Millersburg waiting to meet UP 2540 South. Passenger Train 500 then followed UP 7935 North to Marion, the next siding in direction of travel, where 500 was able to pass.
    - This incident embodies three types of FTI:
        - A passenger train awaiting at the meeting point the arrival of an opposing freight train
        - Delay due to a mechanical defect detector activation
        - A passenger train following a slower preceding freight train to a passing point

11/18/2019 – 500 Delay, Eugene to Brooklyn

Incident Code	Date	Train	Begin	End	Min of Delay	Host	Notes
B	11/18/19	500	Eugene	Albany	41	UP	Follow UP 5446, Milepost, 650, 690, Z
B	11/18/19	500	Albany	Salem	7	UP	Follow Non-fitter, Milepost, 690, 719, UP 5446
B	11/18/19	500	Salem	Oregon City	15	UP	Follow No fitter, Milepost, 719,759, UP 5446, Z
B	11/18/19	500	Oregon City	Portland	13	UP	Follow Non-fitter, Milepost, 759, 765, UP 5446, Z

- Train 500 was delayed 76 minutes between Eugene and Portland. The train was forced to follow a non-clearing Z train from Eugene to Brooklyn, resulting in 1 hour and 16 minutes of delay.
    - **ODOT to Amtrak** – Rather than follow the Z train, there could have been an opportunity to leap-frog the Z train at Eugene Yard/Irving where there is a 15,796-foot controlled siding. Putting 500 out first would have only minimally delayed the Z train and avoided the 76 minutes of FTI delay to the train and passengers onboard the train. It is important to note that 15,000+ feet of siding at the Eugene yard was paid for by ODOT as a portion of the $15 million required to invest in UP capacity projects in response to adding an additional PDX to Eugene round-trip in October 2000.
    - **Amtrak Response** – The initial information on the delay is that the UP's ZLCTM freight (north bound) was stopped due to having two doors open, which resulted in freight falling out of the two cars and onto the rail/right of way. The train was stopped in order to secure the two doors. Once the Z train was secure it proceeded north until it could clear at Hito (the only open siding long enough to fit the train). The Z train was 7987 feet long and Irving siding had a train in it at the time of the event.

2/5/2020 – 505 Delay

- Train 505 was delayed 1 hour 40 minutes by a southbound Union Pacific freight train that reportedly activated the combination dragging equipment-hot journal detector at MP 697.8 between Jefferson and Millersburg.
    - **ODOT to Amtrak** - Different sources offer conflicting accounts of this incident but the conductor's delay notes confirm that the freight train, after completing an inspection, proceeded to Millersburg to let 505 pass but was too long to clear between switches of the 7,278-foot long siding, requiring the freight to make reverse saw-by to facilitate 505's passing. The A Report identified the freight train as IBRLC 05 - an intermodal train that originated in Portland destined to Los Angeles. It's not particularly surprising that an intermodal train would be a non-fitter.

      The conductor's notes state: "Follow train stopped for inspection. Did not fit in siding. Waited for them to complete inspection. We pulled into siding and waited for them to shove to clear the siding to let us out the south end. UP 7616, Milepost 699.7, 694.5." While we know that freight train encounter generated 100 minutes of delay to 505 we don't know how many minutes should be allocated to overtaking the stopped freight and waiting while a crew member inspected for the defect that actuated the detector, versus how much time was consumed executing the reverse saw-by so 505 could get ahead. This is a frustrating example of an FTI incident that cannot be fully dissected because Amtrak employees are not required to provide more precise details.

Amtrak Response - In this specific case the conductors were able to enter as much information as they would have been privy to at the time and in general entered a fairly accurate summary of what they encountered. The train did not actually follow the IBRLC. What happened was the IBRLC had already been stopped for activating the detector on 10 separate axles (approx. 23 sticking brakes were found). The following portion accounts for the time in which delay was encountered (due to less favorable signals) leading up to stopping for the IBRLC (South). Train 505 stopped at 2121 [9:21 p.m.] and the IBRLC began pulling forward at 2330 [11:30 p.m.]. Once the IBRLC pulled forward train 505 was able to enter the siding and hold for the IBRLC to shove back the other direction for 505 to depart out of the south end of the siding. The complete info from the conductors' delay report is accurate in relation to the moves that took place compared with the info obtained from the UP. *[Note: The times provided in Amtrak's explanation above do not correspond to the official record of Train 505's movement. Train 505 departed Salem at 7:33 p.m. (1933), 22 minutes late; departed Albany at 9:44 p.m. (2144), 2 hours 4 minutes late; and arrived Eugene at 10:25 p.m. (2225), 1 hour 45 minutes late. If nothing else, this illustrates the difficulties of extracting details involved in delay incidents from two large bureaucracies – Amtrak and UP.]*

1/28/2020 – 505 and 508 Delay

Incident Code	Date	Train	Begin	End	Min of Delay	Host	Notes
B	1/28/20	505	Portland	Oregon City	14	UP	Meet 508, Siding at Clackamas PDX-EUG Conductor=00819941
B	1/28/20	505	Portland	Oregon City	15	UP	Pass: Was instructed by dispatcher to pick UP Conductor up and drop him off at his head in, UP Unknown, Siding at Hito[3]
B	1/28/20	508	Salem	Oregon City	11	UP	Meet UP 8208, Siding at Coalca

- Train 508 met UP 8208 South at Coalca. This meet delayed 508 11 minutes, which is not particularly egregious, especially if the opposing freight isn't there yet. But in this case there's solid evidence the delay at Coalca may have been elongated due to a non-fitter UP 8208, although 508's conductor did not report that information.
- Train 508 continued on to Clackamas where it met 505, which had been waiting there for a while (505's delay report shows 14 minutes awaiting 508).

[3] While the entire delay sequence is listed here, only this row reflects the incident for this section.

- Meanwhile, UP 8208 South was advanced to Hito to let 505 pass. But, the events that followed indicate that UP 8208 South might have been too long to fit in Hito siding, even though it is the longest siding (8,011 feet) in the valley.
- The Amtrak conductor's delay information indicates that when 505 caught up to the freight train, it was necessary to do a reverse saw-by in order for 505 to get by, because he/she noted 505 was instructed by the dispatcher to pick up the freight train's conductor and drop him off at the head end of his train. This information, plus the expenditure of 15 minutes, are indicators of a possible reverse saw-by procedure..
- Based on the information provided, it seems likely that a non-fitter incident might have occurred. ODOT did not have information on length of the freight train, which could have clarified whether the train was too long for the Hito siding. Amtrak does not provide a mechanism or format for capturing delay details such as length of freight train. Instructing conductors to gather these critical details on other trains encountered, such as whether other trains are non-fitters, and whether it is a "meet" with an opposing train or "passing" another train going the same direction, would be valuable in understanding delay causes.

1/29/2020 – 505 and 508 Delay

Incident Code	Date	Train	Begin	End	Min of Delay	Host	Notes
B	1/29/20	505	Oregon City	Salem	21	UP	Cross over or go around Saw by, non-fitter, UP 9017, Siding at Hito
B	1/29/20	508	Oregon City	Salem	8	UP	Meet UP 9017, Siding at Coalca

- Delays reported on 1/28 seem to have occurred again on 1/29, involving the same trains (505 and 508) and a non-fitter UP freight train north of Salem, including a reverse saw-by at Hito.
- Train 508 met UP 9017 South at Coalca, then met 505 at Clackamas. After making the station stop at Oregon City, Train 505 caught up to UP 9017 at Hito where it logged 21 minutes of FTI to get around the freight train in what had to be a reverse saw-by.
- In this case, 505's conductor didn't mention transporting the UP freight conductor to the head end of their train but likely occurred just like it did the day before. Train 508's conductor didn't report that their meet at Coalca was with a non-fitter but, again, this seems precisely to be the case.
- If UP 9017 did not fit at Hito, the longest siding in the valley, it would not clear at Coalca either.

12/2/2019 – 500 Delay

- **Real-time delay record** –

- Per UP, 500 currently stopped behind freight ZLCTM at Irving/MP 653.4, Brooklyn Sub. Freight crew is closing open doors on containers. Once released, 500 expected to follow freight for some distance on account freight is too long to fit in the available sidings.

1/23/2020 – 511 Delay

- **Real-time delay record** –
  - UP advises that 511 is expected to take delay Salem to Albany due to freight MPDEU setting-out 25 cars ahead at Renard, MP 715.5/Brooklyn Sub.
  - Delayed approximately 1 hour while UP MPDEU set-out 22 cars at Renard/MP 715.5 due to excessive train length and unable to fit into sidings.
  - Freight now proceeding ahead to Marion/MP 705.8 where it will clear into siding and allow 511 to pass.

  - **Amtrak Response** – Train 511 encountered significant freight delay today due to a planned, but out of slot freight set-out of 22 cars at Renard. The train that caused the delay was scheduled to depart from Albina Yard at 22:30 on 1/22, however due to some issues was allowed to depart late, even considering its non-fitter status.
  - The reason that the train was allowed to depart is that its original departure time was out of the time frame that would have delayed Amtrak trains and it had been granted a train length exemption. The train length exemption is what allowed it out of the yard and was not supposed to include the train leaving today, however the yard released it. The train set out 22 cars from the head-end at Renard, after which the train length was 6,125 feet. Once the cars were cut the train cleared at Marion. UP has already had addressed this issue on a conference call and will follow up from there.

Data Gap Analysis

Incidents of passenger trains overtaking and passing non-fitter freight trains through the reverse saw-by procedure are not uncommon and may become more prevalent as railroad companies seek to run longer freight trains. In every reverse saw-by example studied for this report the passenger train crew was briefed beforehand by the train dispatcher and was required to transport a member of the freight crew back to the head end of the freight train upon completion of the freight's back-up move. However, Amtrak conductors do not uniformly report this information on their delay reports which makes it difficult for ODOT to identify when they occur. Of the various kinds of meeting and passing procedures, the reverse saw-by has the potential for creating the highest amount of delay.

To better understand the causes for reverse saw-bys, ODOT should work with Amtrak to reform delay report protocols to capture more details about reverse saw-by incidents when they are necessary. Ideally, field reports would capture the time lost running on restrictive signals before stopping at the passing point, the amount of time consumed in the back-up movement, and the time required to transport the freight crew back to the front of their train,

and the departure time from the place of passing. Details of these events are crucial to determining potential time savings through investments in lengthening sidings and building sections of double main tracks.

C. Identify delays to passenger trains caused when an opposing freight train exceeds the length of a siding, resulting in a portion of the freight train still occupying the track required for the passenger train's progression.

Data Received

Some of the incidents described in B above include a component that comports with delay type C, so they are duplicated here below.

A Report

1/28/2020 – 505 and 508 Delay

Incident Code	Date	Train	Begin	End	Min of Delay	Host	Notes
C	1/28/20	505	Portland	Oregon City	14	UP	Meet 508, Siding at Clackamas PDX-EUG Conductor=00819941
C	1/28/20	505	Portland	Oregon City	15	UP	Pass: Was instructed by dispatcher to pick UP Conductor up and drop him off at his head in, UP Unknown, Siding at Hito
C	1/28/20	508	Salem	Oregon City	11	UP	Meet UP 8208, Siding at Coalca[4]

- Train 508 met UP 8208 South at Coalca. This meet delayed 508 11 minutes, which is not particularly egregious, especially if the opposing freight isn't there yet. But in this case there's solid evidence the delay at Coalca may have been elongated due to a non-fitter UP 8208, although 508's conductor did not report that information.
- Train 508 continued on to Clackamas where it met 505, which had been waiting there for a while (505's delay report shows 14 minutes awaiting 508).
- Meanwhile, UP 8208 South was advanced to Hito to let 505 pass. But, the events that followed indicate that UP 8208 South might have been too long to fit in Hito siding, even though it is the longest siding (8,011 feet) in the valley.
- The Amtrak conductor's delay information indicates that when 505 caught up to the freight train, it was necessary to do a reverse saw-by in order for 505 to get by, because he/she noted 505 was instructed by the dispatcher to pick up the freight train's conductor and drop him off at the head end of his train. This information, plus the expenditure of 15 minutes, are indicators of a possible reverse saw-by procedure..

[4] While this entire instance is important for context, only the Salem to Oregon City 508 meet up with UP 8208 fits within the type C instance.

- Based on the information provided, it seems likely that a non-fitter incident might have occurred. ODOT did not have information on length of the freight train, which could have clarified whether the train was too long for the Hito siding. Amtrak does not provide a mechanism or format for capturing delay details such as length of freight train. Instructing conductors to gather these critical details on other trains encountered, such as whether other trains are non-fitters, and whether it is a "meet" with an opposing train or "passing" another train going the same direction, would be valuable in understanding delay causes.

D. Identify passenger train delays arising from freight train mechanical failures;

Data Received

A Report

5/22/2020 – 500 Delay[5]

- **'Train 500 (22) North of Albany, OR – Freight Interference:** 22MAY2020 Train 500(22) was delayed at Millersburg, MP/695 UPRR Brooklyn Subdivision, 4.1 miles north of Albany, meeting UP freight train MPDWC. Train 500(22) further delayed following UPRR freight MEUPD to Marion, MP/704.2. **Delay: 500(22) 49"'.** *[This account appeared in Amtrak's A Report issued May 23, 2020.]*
- The conductor's record of delay in the May 22nd TFR report received by ODOT read: '34" Meet. Red at Millersburg. Wait for UP 2540 to inspect train and clear in the siding. 15" Follow running on signals to Marion following UP 7935. UP 7935 siding, Marion.'
- **ODOT FTI Analysis Discussion:**
    - While the A Report incident summary reported 49 minutes of freight interference without further allocation, the conductor's delay report attributed 34 minutes to meeting the opposing train at Millersburg and 15 minutes following the preceding train to Marion, the next siding. The A Report account also omitted information about UP 2540 South's train inspection before clearing in Millersburg siding, which the conductor noted without further elaboration. It's probable that UP 2540 South activated the defective equipment detector approximately 1.8 miles north of the north switch of Millersburg, requiring it to stop and a crew member inspect for the alleged defect before continuing to Millersburg.
    - It is also apparent that northbound freight train UP 7935 North (MEUPD) was standing on the mainline at Millersburg waiting to meet UP 2540 South. Passenger Train 500 then followed UP 7935 North to Marion, the next siding in direction of travel, where 500 was able to pass.

[5] This delay incident also applies to sections A and B.

- This incident embodies three types of FTI:
  - A passenger train awaiting at the meeting point the arrival of an opposing freight train
  - Delay due to a mechanical defect detector activation
  - A passenger train following a slower preceding freight train to a passing point

Data Gaps Analysis

The role of Amtrak conductors is unique because they create the only written record of delays that's available to ODOT. The ability for Amtrak and stakeholders like ODOT to develop solutions to reduce the amount of FTI relies heavily on a conductor's written report. If subtle details around what caused the delay are missed, fixing the problem can be challenging. For example, if a freight train trips a detector causing delay to a passenger train, the Amtrak conductor should identify which car or cars from the freight train caused the issue. Adding this detail would provide more clarity around the delay and help develop solutions to prevent such delays in the future.

E. List any other reasons for passenger delays not described in subsections (A) to (D) of this section.

Data Received

A Report

1/5/2020 – Locomotive Failure Service Cancelled, Portland, OR

- Train 513 was delayed after departing Portland due to a blown radiator fan fuse. The train was stopped at MP 765.8 on the Brooklyn Subdivision of the Union pacific Railroad. After troubleshooting with CNOC technicians the crew was able to make repairs to locomotive AMTK 74, only enough to return to the initial terminal of Portland. There were no replacement locomotives (Amtrak or freight) available in the area to rescue. All affected passengers were bused to Eugene, incurring a 1 hour and 15-minute delay.
- Train 14 was delayed at Portland so that crews could remove locomotive AMTK 40, to add to the original consist of 513. Train 508 was originated in Portland, with a replacement bus service operated from Eugene to Portland to for passengers, which made a connection with Train 508.

1/6/2020 – Engine Problems, Eugene, OR

- Train 11 was delayed operating between Portland and Eugene was delayed due to mechanical issues with the trailing unit AMTK 506. A UP freight unit (UP 6354) was available and added in Eugene. The freight unit was placed on Train 11 at Eugene/MP 647.6 of the UP Brooklyn Subdivision. Once the unit was added and the mandatory tests performed, 11 continued to Chemult, OR.

1/7/2020 - Train 11 – Vehicle Strike, South of Portland

- At approximately 4:45 PM Train 11 operating southbound with 2 locomotives (E/155 and E/38) and 10 cars, struck an occupied vehicle at Harrison Street at MP 764.26 Brooklyn Subdivision UP 6 miles south of the Portland station. The 4 occupants of the car did not sustain any injuries. There were no reported injuries to the crew or the 133 passengers onboard. The ladder on the fireman side of the locomotive was bent under the truck and was removed by Portland mechanical team. The train maintained HEP. Both Engineers requested and received relief at the scene. The authorized track speed is 55 MPH. The weather was reported to be cloudy and 50 degrees. Local authorities, EMS, and Amtrak PDX TM responded to the scene. Once the investigation was complete, train 11 continued. Amtrak police notified.

1/7/2020 – BNSF Mudslide, North of Olympia, WA

- At approximately 8:00 AM the BNSF confirmed a blocking event at MP 8.3 on the BNSF Seattle Subdivision, 23.9 miles north of Olympia. A 48-hour moratorium was enacted and is scheduled to expire Thursday January 9th, 2020 at 8:00 AM. The mudslide and 48-hour moratorium caused many train cancellations of trains originating and terminating in Oregon. Delays were experienced as buses were used to transport passengers during the train moratorium period. This type of incident always results in a 48-hour service moratorium.

1/7/2020 – Crew Rest, Klamath Falls, OR

- Train 14 was delayed at Klamath Falls, OR/MP 429.7, on the UP Cascade Subdivision, due to crew rest off Train 11 (06) which arrived at 1:19 AM, 3 hours and 29 minutes late. Crew signed up on rest at 8:35 AM and Train 14 departed Klamath Falls at 9:05 AM, 48 minutes late.

2/12/2020 – 511 Delay

- **Real-time delay record** –
    - 511 delayed at Johnson Creek, MP 765.6/UP Brooklyn Sub. UP Freight ZLCTM standing and fouling mainline ahead while entering yard.
    - Per UP, freight ZLCTM delayed entering Brooklyn Yard due to yard congestion. It is expected to be cleared of mainline by 11:10 AM.
    - Delay of 1 hour and 14 minutes, train is on the move to Oregon City after delay of freight interference at Johnson Creek, MP 765.6 Brooklyn Sub.

5/24/2020 – 500 Delay

- Train 500 was delayed 35 departing Eugene, OR/MP647, on the UP Brooklyn Subdivision because they were prevented from moving from Eugene Yard to Eugene Depot due to the arrival of UP 8489 North via the WP Siding.
    - Evidently the crew of the freight train were close to expiring on the 12-hour law, so 500's equipment was held at the yard until the freight train cleared. This was on the deadhead move (no passengers) from the yard to the depot, but the net result was a 35-minute late departure from Eugene, which did

affect passengers thereafter. The train was 18 minutes late arriving in Portland.

1/8/2020 – 514 Delay

Delay Reason ID	Date	Train	Begin	End	Min of Delay	Host Rail	Notes
E	1/8/2020	14	XFS	Eugene	11	UP	Wait for station track Amtrak 511, Milepost, 647.1, 647.1 in Eugene

- Only the siding at Eugene depot has platform access. In this case Train 511 from Portland, due into Eugene at 12:20 p.m., had not yet vacated the siding so the northbound Coast Starlight, Train 14, could make its stop at Eugene, resulting in 14 being delayed 11 minutes waiting for a landing spot.

1/9/2020 – 505 Delay

Delay Reason ID	Date	Train	Begin	End	Min of Delay	Host Rail	Notes
E	1/9/2020	505	Oregon City	Salem	5	UP	Cross over or go around Amtrak 508 at siding, Coalca

- This is another example of how a lack of standards for reporting delay hurts understanding. This is actually a Section A type "meet" between two passenger trains going in opposite directions, but the notes provided do not clearly describe this action.

TFR

Delay Reason ID	Date	Train	Begin	End	Min of Delay	Host Rail	Notes
E	1/6/2020	11	Portland	Portland	4	UP	Wait for scheduled departure time
E	1/6/2020	11	XH3	Salem	2	UP	Per bulletin Milepost, 720.6, 720.4, 25, MT
E	1/6/2020	11	Salem	Albany	2	UP	Per bulletin Milepost, 716.75, 716.65, 25, MT
E	1/6/2020	11	Albany	Eugene	2	UP	Per bulletin Milepost, 660.65, 660.45, 60, MT

E	1/6/2020	11	Eugene	XFS	5	UP	Insufficient run time[6]
E	1/6/2020	11	Klamath Falls	Klamath Falls	3	UP	Water, commissary, toilet/trash dumping
E	1/6/2020	14	Dunsmuir, CA	Klamath Falls	2	UP	Kill time to prevent early arrival
E	1/6/2020	14	Klamath Falls	Klamath Falls	48	UP	Crew rest Other, KFS
E	1/6/2020	14	Klamath Falls	Klamath Falls	34	UP	Wait for scheduled departure time
E	1/6/2020	14	Klamath Falls	Chemult	4	UP	Trespasser reported on tracks around MP 473.0 Slowed between MP listed, Milepost, 472.0, 476.0
E	1/6/2020	14	Chemult	XFS	4	UP	Engineer restroom break Control Point, Cascade Summit
E	1/6/2020	14	XFS	Eugene	6	UP	Insufficient runtime
E	1/6/2020	14	XFS	Eugene	4	UP	Per dispatcher (radio/phone) Milepost, 565.85, 566.75, 15, mt
E	1/6/2020	14	Albany	Salem	3	UP	Per dispatcher (radio/phone) Milepost, 716.65, 716.75, 15, mt
E	1/7/2020	500	Salem	Oregon City	1	UP	Per bulletin Milepost, 720.4, 720.6, 25, MT
E	1/7/2020	500	Portland	Portland	12	BN	Wait for scheduled departure time
E	1/7/2020	505	Oregon City	Salem	4	UP	Per track bulletin Milepost, 755.95, 755.82, 30, MT, Milepost, 720.6, 720.4, 25, MT, Milepost, 718.6, 718.5, 15, MT
E	1/7/2020	505	Salem	Albany	4	UP	Per track bulletin Milepost, 716.75, 716.65, 15, MT
E	1/7/2020	505	Albany	Eugene	2	UP	Per track bulletin Milepost, 674.2, 673, 65, MT, Milepost, 660.65, 660.45, 60, MT
E	1/7/2020	508	Eugene	Albany	1	UP	Per track bulletin Milepost, 660.45, 660.65, 60, MT
E	1/7/2020	508	Eugene	Albany	1	UP	Per track bulletin Milepost, 673, 674.2, 65, MT

[6]Insufficient run time means that in the opinion of the conductor the "pure run time" (PRT) allocated for the train to travel between these two points isn't long enough and may need to be re-evaluated the next time Amtrak does a ride study.

E	1/7/2020	508	Salem	Oregon City	2	UP	Per track bulletin Milepost, 720.4, 720.6, 25, MT
E	1/7/2020	508	Salem	Oregon City	2	UP	Per track bulletin Milepost, 718.5, 718.6, 15, MT
E	1/7/2020	511	Oregon City	Salem	3	UP	Per dispatcher (radio/phone) Milepost, 718.5, 718.6, 15, MT
E	1/7/2020	511	Oregon City	Salem	3	UP	Per track bulletin Milepost, 720.6, 720.4, 25, MT
E	1/7/2020	511	Salem	Albany	4	UP	Per dispatcher (radio/phone) Milepost, 716.75, 716.65, 15, MT
E	1/7/2020	511	Albany	Eugene	3	UP	Per track bulletin Milepost, 674.2, 673.0, 65, MT
E	1/7/2020	511	Albany	Eugene	2	UP	Per track bulletin Milepost, 660.65, 660.45, 60, MT
E	1/8/2020	11	Portland	Portland	5	UP	Passenger and/or baggage
E	1/8/2020	11	Portland	XH3	2	UP	Per track bulletin Milepost, 755.95, 755.82, 30, MT
E	1/8/2020	11	XH3	Salem	3	UP	Per track bulletin Milepost, 720.6, 720.41, 15, MT
E	1/8/2020	11	Eugene	XFS	9	UP	Per track bulletin Milepost, 620.7, 620.4, 25, MT, Milepost, 567.65, 567.0, 15, main, Milepost, 566.75, 565.82, 15, MT
E	1/8/2020	11	Klamath Falls	Klamath Falls	4	UP	Wheelchair
E	1/8/2020	14	Klamath Falls	Klamath Falls	35	UP	Wait for scheduled departure time
E	1/8/2020	14	Dunsmuir, CA	Klamath Falls	7	UP	Wet / slippery rail Milepost, 322, 429
E	1/8/2020	14	XFS	Eugene	4	UP	Per track bulletin Milepost, 620.4, 620.7, 25, MT
E	1/8/2020	14	Salem	XH3	2	UP	Per track bulletin Milepost, 720.41, 720.6, 15, MT
E	1/8/2020	14	XH3	Portland	6	UP	Per dispatcher (radio/phone) Milepost, 755, 756, 15, MT
E	1/9/2020	508	Portland	Vancouver	2	BN	Wet / slippery rail Slipping wheels due to heavy rain, Milepost, 7.0, 8.8

Data Gap Analysis

The events listed above are examples of delays caused by other factors unrelated to FTI and PTI, which are this study's primary concerns. The list includes delays for which Amtrak itself is responsible as well as other delay types assigned to host railroads. Another category not represented above are third-party delays that are outside the control of Amtrak and host railroads, such as police or fire department actions, weather, and drawbridge openings. For these kinds of delays the reporting is very straightforward and they do not present a data gap issue.