Passenger Rail Service Performance

Jeremy Latimer
Director of Rail Services
Agenda – August 30, 2023

VPRA Board Meeting Update

- VRE Performance
- Amtrak Performance
- Deep Dives
  - Heat Orders
  - Washington Union Station Issues
  - APMP (Maintenance and Construction Work Coordination)
VRE performance improved considerably from March but is still below 90% on-time percentage.

VRE Last Station OTP v. Delay Minutes

VRE On Time Threshold:
trains arrive at last scheduled stop within six minutes of schedule
VRE is being impacted by disruptions at Washington and Amtrak trains operating out of slot

Top 4 VRE delay causes over past 6 months (Feb-July 2023)

- **Amtrak Interference**: VRE trains delayed by an Amtrak train
  - February: 614
  - March: 682
  - April: 618
  - May: 914
  - June: 653
  - July: 999
  - Amtrak interference is at a 6-month high

- **Slow Orders**: Speed restrictions due to track conditions
  - February: 805
  - March: 567
  - April: 504
  - May: 808
  - June: 129
  - July: 224
  - Slow orders have dropped significantly since May

- **CSX Interference**: VRE trains delayed by a CSX freight train
  - February: 205
  - March: 529
  - April: 272
  - May: 258
  - June: 349
  - July: 350

- **Terminal Congestion**: VRE trains delayed within the Washington terminal
  - February: 253
  - March: 200
  - April: 246
  - May: 502
  - June: 178
  - July: 316
  - The Service Performance Committee facilitated discussions between VRE and Amtrak about operations at Washington
VPRA Board Meeting Update

- VRE Performance
- Amtrak Performance
- Deep Dives
  - Heat Orders
  - Washington Union Station Issues
  - APMP (Maintenance and Construction Work Coordination)
Heat orders, slow orders, a July 11 derailment, and July 16 power outage at Washington severely affected July performance

NE Regional All-Station OTP v. Delay Minutes (RF&P Corridor Only)\(^1,2\)

2nd Roanoke and third Norfolk roundtrips began July 11, 2022

```plaintext
Minutes of Delay Monthly OTP %

<table>
<thead>
<tr>
<th>Month</th>
<th>Delay Minutes</th>
<th>OTP</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 2022</td>
<td>8,102</td>
<td>64.2%</td>
</tr>
<tr>
<td>Jun 2022</td>
<td>7,821</td>
<td>67.1%</td>
</tr>
<tr>
<td>Jul 2022</td>
<td>10,066</td>
<td>61.7%</td>
</tr>
<tr>
<td>Aug 2022</td>
<td>16,291</td>
<td>62.9%</td>
</tr>
<tr>
<td>Sep 2022</td>
<td>13,197</td>
<td>71.0%</td>
</tr>
<tr>
<td>Oct 2022</td>
<td>13,262</td>
<td>69.5%</td>
</tr>
<tr>
<td>Nov 2022</td>
<td>12,009</td>
<td>70.7%</td>
</tr>
<tr>
<td>Dec 2022</td>
<td>13,804</td>
<td>69.4%</td>
</tr>
<tr>
<td>Jan 2023</td>
<td>10,059</td>
<td>81.3%</td>
</tr>
<tr>
<td>Feb 2023</td>
<td>11,199</td>
<td>76.6%</td>
</tr>
<tr>
<td>Mar 2023</td>
<td>13,517</td>
<td>73.7%</td>
</tr>
<tr>
<td>Apr 2023</td>
<td>13,415</td>
<td>68.4%</td>
</tr>
<tr>
<td>May 2023</td>
<td>14,571</td>
<td>70.7%</td>
</tr>
<tr>
<td>Jun 2023</td>
<td>13,257</td>
<td>66.4%</td>
</tr>
<tr>
<td>Jul 2023</td>
<td>20,823</td>
<td>48.1%</td>
</tr>
</tbody>
</table>
```

Amtrak On Time Threshold:
trains arrive at each station stop within fifteen minutes of schedule

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(1) OTP excludes OTP on NS Roanoke corridor
(2) Delay minutes exclude NOD and all delays on NS
The Carolinian, Palmetto, Silver Meteor, and Silver Star similarly struggled in July

Long Distance All-Station OTP v. Delay Minutes (RF&P Corridor Only)\(^1,2,3\)

<table>
<thead>
<tr>
<th>Month</th>
<th>OTP</th>
<th>Delay Minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 2022</td>
<td>37.6%</td>
<td>6,740</td>
</tr>
<tr>
<td>Jun 2022</td>
<td>43.2%</td>
<td>7,566</td>
</tr>
<tr>
<td>Jul 2022</td>
<td>36.2%</td>
<td>8,505</td>
</tr>
<tr>
<td>Aug 2022</td>
<td>43.7%</td>
<td>8,505</td>
</tr>
<tr>
<td>Sep 2022</td>
<td>56.5%</td>
<td>5,451</td>
</tr>
<tr>
<td>Oct 2022</td>
<td>55.7%</td>
<td>6,862</td>
</tr>
<tr>
<td>Nov 2022</td>
<td>54.3%</td>
<td>6,535</td>
</tr>
<tr>
<td>Dec 2022</td>
<td>64.5%</td>
<td>6,664</td>
</tr>
<tr>
<td>Jan 2023</td>
<td>65.7%</td>
<td>6,071</td>
</tr>
<tr>
<td>Feb 2023</td>
<td>59.1%</td>
<td>7,790</td>
</tr>
<tr>
<td>Mar 2023</td>
<td>52.0%</td>
<td>8,850</td>
</tr>
<tr>
<td>Apr 2023</td>
<td>53.9%</td>
<td>8,305</td>
</tr>
<tr>
<td>May 2023</td>
<td>51.8%</td>
<td>9,035</td>
</tr>
<tr>
<td>Jun 2023</td>
<td>44.2%</td>
<td>9,035</td>
</tr>
<tr>
<td>Jul 2023</td>
<td>33.6%</td>
<td>12,458</td>
</tr>
</tbody>
</table>

2nd Roanoke and third Norfolk roundtrips began July 11, 2022

Amtrak On Time Threshold:
trains arrive at each station stop within fifteen minutes of schedule

\(^1\) OTP excludes OTP on NS Roanoke corridor
\(^2\) Delay minutes exclude NOD and all delays on NS
\(^3\) Long distance trains include Carolinian, Palmetto, Silver Meteor, Silver Star
Year-to-date customer on-time performance is below 80%.

### January to July 2023 Customer On-Time Performance¹,²

<table>
<thead>
<tr>
<th></th>
<th>Northbound</th>
<th>Southbound</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NE Regional - Roanoke</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arrivals</td>
<td>66%</td>
<td>68%</td>
</tr>
<tr>
<td>(≤15 min late)</td>
<td>33%</td>
<td>63%</td>
</tr>
<tr>
<td>16-30 min late</td>
<td>23%</td>
<td>16%</td>
</tr>
<tr>
<td>31-60 min late</td>
<td>14%</td>
<td>12%</td>
</tr>
<tr>
<td>&gt;60 min late</td>
<td>7%</td>
<td>9%</td>
</tr>
<tr>
<td></td>
<td>8%</td>
<td>8%</td>
</tr>
</tbody>
</table>

| **NE Regional - RF&P** |            |            |
| Arrivals               | 70%        | 63%        |
| (≤15 min late)         | 33%        | 63%        |
| 16-30 min late         | 16%        | 12%        |
| 31-60 min late         | 14%        | 12%        |
| >60 min late           | 6%         | 9%         |
|                       | 10%        | 13%        |

| **Long Distance**     |            |            |
| Arrivals              | 100%       | 90%        |
| (≤15 min late)        | 100%       | 90%        |
| 16-30 min late        | 100%       | 90%        |
| 31-60 min late        | 100%       | 90%        |
| >60 min late          | 100%       | 90%        |

¹ Includes data for arrivals into WAS
² Long distance trains: Carolinian, Palmetto, Silver Meteor, Silver Star
Poor performance in July 2023 brings down figures for the year

July 2023 Customer On-Time Performance\(^1,2\)

<table>
<thead>
<tr>
<th></th>
<th>Northbound</th>
<th>Southbound</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NE Regional - Roanoke</td>
<td>NE Regional - RF&amp;P</td>
</tr>
<tr>
<td>51%</td>
<td>56%</td>
<td>15%</td>
</tr>
<tr>
<td>15%</td>
<td>16%</td>
<td>25%</td>
</tr>
<tr>
<td>12%</td>
<td>14%</td>
<td>43%</td>
</tr>
<tr>
<td>22%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Customer OTP Target

- >60 min late
- 31-60 min late
- 16-30 min late
- On-time (≤15 min late)

Arrivals

(1) Includes data for arrivals into WAS
(2) Long distance trains: Carolinian, Palmetto, Silver Meteor, Silver Star
Virginia service continues to be impacted by disruptions at Washington, construction and maintenance-related slow orders, and CSX heat orders.

Top 4 Amtrak delay causes over past 6 months (Feb-July 2023)

- **Slow Orders (DSR)**
  - Speed restrictions due to track conditions (non-weather related)
  
  February: 3,711  
  March: 4,784  
  April: 2,422  
  May: 3,775  
  June: 2,115  
  July: 2,857

- **Weather (WTR)**
  - Including heat-related speed restrictions and storms
  
  February: 391  
  March: 150  
  April: 2,900  
  May: 1,352  
  June: 4,351  
  July: 9,200

- **Amtrak Interference (PTI)**
  - Amtrak trains delayed by other Amtrak trains
  
  February: 2,930  
  March: 2,958  
  April: 2,973  
  May: 3,056  
  June: 2,262  
  July: 2,805

- **Freight Interference (FTI)**
  - Amtrak trains delayed by a freight train
  
  February: 2,517  
  March: 2,599  
  April: 1,861  
  May: 2,395  
  June: 1,760  
  July: 2,270

In addition to heat orders, a July 16 lightning strike caused a power outage at Washington and 1,794 minutes of weather-related delays.

Train interference delays are primarily secondary delays caused by trains operating out of slot (i.e., due to heat and slow orders, delayed engine swaps, late arrivals into Virginia, etc.).

(1) Delay minutes exclude NOD and all delays on NS.
Agenda – August 30, 2023

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Heat order delay minutes in July were 53% higher than July 2022 and the highest ever in a single month since performance monitoring began.

Monthly Minutes of Heat Order Delays

(1) Temperature data from Richmond International Airport. August 2023 data through 8/8/23.
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Equipment swaps, many short-staffed, resulted in over 1,600 minutes of delay to southbound trains at WAS in July.

Key themes that show up in the delay remarks:
- Late engine swaps; Switch/setout of cars and locomotives
- Mechanical and PTC issues
- Terminal congestion and train interference
- Crews arriving on late trains

The issues above are compounded by:
- Switch and signal reliability issues
- Crew shortages

Southbound Delays at Washington Union Station (WAS), Jul 2023

(1) Excludes NOD and delays on the Cardinal and Crescent.
In July, Train 91 (southbound Silver Star) arrived off the NEC on-time (within 15 minutes) most days but frequently encountered delays in Washington.

### Train 91 typically arrives off the NEC on-time

<table>
<thead>
<tr>
<th>Train 91 Station OTP</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
</tr>
</thead>
<tbody>
<tr>
<td>Washington Union Station</td>
<td>90%</td>
<td>93%</td>
<td>83%</td>
</tr>
<tr>
<td>Alexandria</td>
<td>77%</td>
<td>83%</td>
<td>52%</td>
</tr>
<tr>
<td>Richmond Staples Mill Road</td>
<td>26%</td>
<td>30%</td>
<td>3%</td>
</tr>
<tr>
<td>Petersburg</td>
<td>29%</td>
<td>30%</td>
<td>3%</td>
</tr>
</tbody>
</table>

### Train 91 arrived WAS on-time but left late 10 times in July

<table>
<thead>
<tr>
<th>Date</th>
<th>Arrive</th>
<th>Depart</th>
<th>Delay</th>
<th>Cause(s) at WAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>7/1/2023</td>
<td>-1</td>
<td>32</td>
<td>32</td>
<td>SVS – Equipment swap</td>
</tr>
<tr>
<td>7/9/2023</td>
<td>0</td>
<td>23</td>
<td>23</td>
<td>SYS – Yard manpower shortage</td>
</tr>
<tr>
<td>7/10/2023</td>
<td>6</td>
<td>27</td>
<td>27</td>
<td>SVS – Waiting on late 95 PTI – Meet 92</td>
</tr>
<tr>
<td>7/12/2023</td>
<td>13</td>
<td>15</td>
<td>15</td>
<td>SYS – Derailment single-tracking</td>
</tr>
<tr>
<td>7/17/2023</td>
<td>13</td>
<td>76</td>
<td>57</td>
<td>SYS – Late crew</td>
</tr>
<tr>
<td>7/18/2023</td>
<td>-2</td>
<td>21</td>
<td>21</td>
<td>SVS – Yard manpower shortage</td>
</tr>
<tr>
<td>7/22/2023</td>
<td>8</td>
<td>20</td>
<td>12</td>
<td>PTI – Congestion with 92 and 195</td>
</tr>
<tr>
<td>7/24/2023</td>
<td>2</td>
<td>25</td>
<td>23</td>
<td>ENG – No HEP</td>
</tr>
<tr>
<td>7/29/2023</td>
<td>0</td>
<td>36</td>
<td>36</td>
<td>SVS – Yard manpower shortage</td>
</tr>
<tr>
<td>7/31/2023</td>
<td>8</td>
<td>19</td>
<td>11</td>
<td>SYS – Late crew</td>
</tr>
</tbody>
</table>

Overall, 14 out of 31 trains departed WAS 15+ minutes late in July.
VPRA Board Meeting Update

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- Deep Dives
  - Heat Orders
  - Washington Union Station Issues
  - APMP (Maintenance and Construction Work Coordination)
Upcoming construction for TRV will add to the current challenges facing passenger rail service in Virginia.

**Ongoing challenges**
- Slow orders from maintenance & non-TRV construction
- Crew and engine swap issues
- Heat orders

**Upcoming large-scale construction for TRV**
- Track and platform closures
- Speed restrictions

**Poor service quality unless proactive action is taken**
### Amtrak Slow Order Delays, Last 6 months

#### Monthly Slow Order Delay Minutes by Segment, WAS-RVR

<table>
<thead>
<tr>
<th>Segment</th>
<th>Feb 2023</th>
<th>Mar 2023</th>
<th>Apr 2023</th>
<th>May 2023</th>
<th>Jun 2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>WAS-XVG</td>
<td>16</td>
<td>32</td>
<td>20</td>
<td>30</td>
<td>32</td>
</tr>
<tr>
<td>XVG-ALX</td>
<td>2</td>
<td>16</td>
<td>109</td>
<td>125</td>
<td>209</td>
</tr>
<tr>
<td>ALX-WDB</td>
<td>125</td>
<td>294</td>
<td>166</td>
<td>177</td>
<td>83</td>
</tr>
<tr>
<td>WDB-QAN</td>
<td>190</td>
<td>298</td>
<td>91</td>
<td>316</td>
<td>161</td>
</tr>
<tr>
<td>QAN-FBG</td>
<td>190</td>
<td>298</td>
<td>91</td>
<td>316</td>
<td>161</td>
</tr>
<tr>
<td>FBG-ASD</td>
<td>190</td>
<td>298</td>
<td>91</td>
<td>316</td>
<td>161</td>
</tr>
<tr>
<td>ASD-RVR</td>
<td>190</td>
<td>298</td>
<td>91</td>
<td>316</td>
<td>161</td>
</tr>
<tr>
<td>RVR-PTB</td>
<td>190</td>
<td>298</td>
<td>91</td>
<td>316</td>
<td>161</td>
</tr>
<tr>
<td>ALX-WDB</td>
<td>190</td>
<td>298</td>
<td>91</td>
<td>316</td>
<td>161</td>
</tr>
</tbody>
</table>

#### DSR Delay Minutes by Segment, July 2023

*excluding segments with <15 min*

<table>
<thead>
<tr>
<th>Segment</th>
<th>Delay Minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>XVG-ALX</td>
<td>551</td>
</tr>
<tr>
<td>WAS-XVG</td>
<td>472</td>
</tr>
<tr>
<td>FBG-ASD</td>
<td>296</td>
</tr>
<tr>
<td>RVM-WBG</td>
<td>292</td>
</tr>
<tr>
<td>WBG-NPN</td>
<td>265</td>
</tr>
<tr>
<td>QAN-FBG</td>
<td>171</td>
</tr>
<tr>
<td>FBG-RVR</td>
<td>139</td>
</tr>
<tr>
<td>WDB-QAN</td>
<td>138</td>
</tr>
<tr>
<td>ALX-XDJ</td>
<td>105</td>
</tr>
<tr>
<td>XDJ-RVR</td>
<td>93</td>
</tr>
<tr>
<td>ASD-RVR</td>
<td>92</td>
</tr>
<tr>
<td>ALX-QAN</td>
<td>85</td>
</tr>
<tr>
<td>RVR-PTB</td>
<td>66</td>
</tr>
<tr>
<td>RVR-RVM</td>
<td>36</td>
</tr>
<tr>
<td>ALX-WDB</td>
<td>29</td>
</tr>
</tbody>
</table>
Amtrak Slow Order Delays, Last 6 months
Q1 2024 Planned APMP Work

**Long Bridge – Northern**
Early Works/Construction Start – Dec 2023 – Oct 2024

**Alexandria Fourth Track (MP 110.1 – MP 104.1)**
Utility relocation, Q3 2023 – Q2 2024

**Lorton Third Track (MP 99.0 – MP 92.3)**
Utility relocation, Q4 2023 – Q4 2026

**Potomac Shores Station (MP 83.0)**
Construction, Q1 2023 – Q1 2024

**Quantico Station Improvements (MP 78.9)**
Phase 2 Construction, Dec 2023 – Feb 2024
Phase 3 Construction, Feb 2024 – Apr 2024

**Arkendale Third Track (MP 78.9 – MP 78.2)**
Phase 3 Work, Dec 2023 – Jan 2024
Signal Cut Over, Jan 2024 – Mar 2024

---

**Minimal (1)**
Work adjacent to tracks or otherwise low impact to service

**Minor (2)**
Trains may experience minimal speed restrictions

**Moderate (3)**
Trains will incur delays while traveling through the work zone

**Major (4)**
Trains will not be able to operate reliably through the work zone
Q1 2024 Planned APMP Work

**Minimal (1)**
Work adjacent to tracks or otherwise low impact to service

**Minor (2)**
Trains may experience minimal speed restrictions

**Moderate (3)**
Trains will incur delays while traveling through the work zone

**Major (4)**
Trains will not be able to operate reliably through the work zone

---

1. **Long Bridge – Northern**
   Early Works/Construction Start – Dec 2023 – Oct 2024

2. **Alexandria Fourth Track (MP 110.1 – MP 104.1)**
   Utility relocation, Q3 2023 – Q2 2024

3. **Lorton Third Track (MP 99.0 – MP 92.3)**
   Utility relocation, Q4 2023 – Q4 2026

4. **Potomac Shores Station (MP 83.0)**
   Construction, Q1 2023 – Q1 2024

5. **Quantico Station Improvements (MP 78.9)**
   Phase 2 Construction, Dec 2023 – Feb 2024
   Phase 3 Construction, Feb 2024 – Apr 2024

6. **Arkendale Third Track (MP 78.9 – MP 78.2)**
   Phase 3 Work, Dec 2023 – Jan 2024
   Signal Cut Over, Jan 2024 – Mar 2024
Q2 2025 Planned APMP Work

Minimal (1)
Work adjacent to tracks or otherwise low impact to service

Minor (2)
Trains may experience minimal speed restrictions

Moderate (3)
Trains will incur delays while traveling through the work zone

Major (4)
Trains will not be able to operate reliably through the work zone

Construction impacts to rail traffic may be more severe than anticipated and need to be analyzed.

1. Long Bridge
   Southern Construction, Q2 2025 – Q2 2031
   Northern Construction, Q3 2024 – Q4 2030

2. Alexandria Fourth Track
   Construction, Q2 2024 – Q3 2026

3. Lorton Third Track
   Construction, Q2 2025 – Q3 2027

4. Franconia-Spfld Bypass
   Construction, Q3 2024 – Q4 2026

5. Franconia-Spfld Station
   Construction, Q3 2024 – Q3 2026

6. Crystal City Station
   Construction, Q3 2024 – Q3 2026

7. Alexandria Station
   Construction, Q2 2024 – Q1 2026

8. Woodford-Milford 3rd Track
   Construction, Q2 2025 – Q4 2026

9. Hanover 3rd Track
   Construction, Q2 2025 – Q4 2026
The severity of the anticipated impact will inform the appropriate mitigation measure

Analysis

How long will the work last?
Overnight, weeks, months, years?

What is the expected impact to service?
None, minor delays, major delays, temporary reduction in capacity, total blockage?

What other projects are ongoing?
Do the cumulative impacts of multiple projects create a larger impact?

Impact Finding

- Short-term / low impact
- Multiple projects with minor impacts
- Long-term / high impact
- Prevents service from operating safely

Potential Course of Action

- Passenger service notice
- Rescheduling of work activities
- Schedule change
- Cancellation

Last resort
(1) Excludes OTP on the Roanoke line; OTP reported for Roanoke trains (Ex: 147, 145, 176) only includes arrivals at ALX and WAS
(1) Excludes OTP on the Roanoke line; OTP reported for Roanoke trains (Ex: 147, 145, 176) only includes arrivals at ALX and WAS.

80% OTP Target
All-Station OTP by Train, November 2022

(1) Excludes OTP on the Roanoke line; OTP reported for Roanoke trains (Ex: 147, 145, 176) only includes arrivals at ALX and WAS

80% OTP Target
All-Station OTP by Train, December 2022

(1) Excludes OTP on the Roanoke line; OTP reported for Roanoke trains (Ex: 147, 145, 176) only includes arrivals at ALX and WAS

80% OTP Target
January 2023

All-Station OTP by Train, January 2023

(1) Excludes OTP on the Roanoke line; OTP reported for Roanoke trains (Ex: 147, 145, 176) only includes arrivals at ALX and WAS

80% OTP Target
(1) Excludes OTP on the Roanoke line; OTP reported for Roanoke trains (Ex: 147, 145, 176) only includes arrivals at ALX and WAS
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April 2023

All-Station OTP by Train, April 2023

(1) Excludes OTP on the Roanoke line; OTP reported for Roanoke trains (Ex: 147, 145, 176) only includes arrivals at ALX and WAS
May 2023

All-Station OTP by Train, May 2023

(1) Excludes OTP on the Roanoke line; OTP reported for Roanoke trains (Ex: 147, 145, 176) only includes arrivals at ALX and WAS
June 2023

All-Station OTP by Train, June 2023

(1) Excludes OTP on the Roanoke line; OTP reported for Roanoke trains (Ex: 147, 145, 176) only includes arrivals at ALX and WAS
All-Station OTP by Train, April 2023

(1) Excludes OTP on the Roanoke line; OTP reported for Roanoke trains (Ex: 147, 145, 176) only includes arrivals at ALX and WAS
Board Meeting Dates

**Next Meeting**

**Wednesday, December 6, 2023**

10:30 a.m. to 2:40 p.m.

VPRA

Truist Place

919 East Main Street

4th Floor – Piedmont Room

Richmond, Virginia 23219

**Next Year: 2024**

Tuesday, January 23

Tuesday, June 4

Tuesday, August 27

Tuesday, November 19