**RTDC I-ETMS Weekly Performance Report**

Week of September 12, 2016



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# **Executive Summary**

# **Overall Program Status**

* On-board release 6.3.12.2 was deployed to the fleet on 7/7/16 and is on 3,849 of 4,505 locomotives as of this report.
* On-board release 6.3.12.4 was released on 8/30/16 and is being tested by BNSF.
* BNSF added Douglas, Arkansas City, LaJunta and Chicago subdivisions on 8/16/16. There are currently 29 active subdivisions out of 87 total subdivisions.
* *BNSF implemented a process on 8/29/16 with the O.C. helpdesk instructing the crew to reboot the radio and/or TMC depending on the state of the PTC in order to increase trains running PTC. Processes are also in place if this occurs more than once on a locomotive to evaluate if a P-Code should be assigned.*

[**Enforcements**](#_Enforcements_(Target:_≤)*(Target: ≤ 0.40 enforcements/1000)*

* ***Current Week*:**  **0.46 enforcements/1000 miles**
* ***Previous Week***: 0.39 enforcements/1000 miles
* ***Previous 4 Week Average***: 0.42 enforcements/1000 miles

[**Initialization Success**](#_FIGURE_3:_Percentage)*(Target: ≥ 80% success rate)*

* ***Current Week:***  **93.73% initialization success rate**
* ***Previous Week:*** 91.92% initialization success rate
* ***Previous 4 Week Average:*** 90.78% initialization success rate

[**En-Route Failures**](#_FIGURE_5:_En-route)*(Target: ≤ 4% en-route failures)*

* ***Current Week:*** **1.41% en-route failures**
* ***Previous Week***: 1.46% en-route failures
* ***Previous 4 Week Average***: 1.24% en-route failures

[**P-codes**](#_Figure_7:_Total)*(Target: ≤ 200 total open)*

* ***Current Week:*****323 total open p-codes**
* ***Previous Week:*** 388 total open p-codes
* ***Previous 4 Week Average:*** 371 total open p-codes

# **Enforcements *(Target: ≤ 0.40 enforcements/1000 miles; Current Value = 0.46)***

## **Figure 1:** Number of enforcements per 1,000 miles

* Current week: 0.46 enforcements/1000 miles
* Previous week: 0.39 enforcements/1000 miles
* Previous 4 Week Average: 0.42 enf/1000 miles
* Continuing overall downward trend

**Figure 2:** Enforcement Root Causes during previous 4 weeks

**Action Plan for Top 5 Issues Leading to Enforcements:**

1. **Human Factors (65%):** Additional BNSF training by division leaders and implementation of technical solutions by BNSF and its vendors.
2. **Unexpected Wayside Change (11%):** Signal issues investigated and corrected when encountered.
3. **Wayside Comm (8%):** Communication issues are tied to IMG and Radio issues. Each instance is investigated and worked by BNSF.
4. **Incorrect Track Selection (5%):** Additional BNSF training by division leaders and implementation of technical solutions by BNSF and its vendors.
5. **Software Issue (5%):** Each item is being tracked by Wabtec with an assigned ECR and targeted software build.

**Initialization Success Rate** *(Target: ≥ 80% success rate; Current Value = 93.73%)*

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## **Figure 3:** Percentage of locomotives attempting to initialize vs. number locomotives that get to the active state each day

* Current week: 93.73% init success rate
* Previous week: 91.92% init success rate
* Previous 4 Week Average: 90.78% init success rate
* Continuing upward trend

## **Figure 4:** Reasons for Missed Opportunities during previous week

**Action Plan for Top 5 Issues Leading to Missed Opportunities**:

1. **Loco not in the consist (42%):** Each division is responsible for following up and making sure each consist contains a PTC locomotive. Extra attention is being placed on new subdivs.
2. **Level-P defect attached (30%):** BNSF is currently reviewing P-code assigning, correction and re-work to improve the PCT of locomotives that are available for PTC service
3. **Loco not in lead (17%):** Each division is going to be responsible for making sure PTC locomotives are in the lead position. New subdivisions are historically the highest %.
4. **Crew Not Qualified (7%):** Each division is going to be responsible for making sure PTC locomotives are in the lead position. New subdivisions are historically the highest %.
5. **Loco Failed State (2%):** The locomotives are mostly tied to LIG failures. New software and template to be deployed to fleet.

**En-Route Failures** *(Target: ≤ 4% en-route failures; Actual value = 1.41%)*

## **Figure 5:** En-route failures expressed as the percentage of active locomotives that transition to a failed state.

* Current week: 1.41% en-route failures
* Previous week: 1.46% en-route failures
* Previous 4 Week Average: 1.24% en-route failures

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## **Figure 6:** En-Route Failure Root Causes during previous 4 weeks

**Action Plan for Top 5 Issues Leading to En Route Failures:**

1. **EAB Comm Loss (27%):** BNSF to get LIG locomotives updated – *planned to start 9/14/2016*.
2. **Invalid EBI Data (25%):** Majority of these are related to the 680 fault (horn wiring), which are assigned a P-Code to be repaired by BNSF.
3. **Triplex Mismatch (21%):** Wabtec will include improvements to the Triplex functionality in 6.3.13.0
4. **Invalid DIO Input (14%):** Known as throttle wiring issue, Project 022S has been opened to track progress. Wabtec provides additional data on the success of the wiring changes.
5. **Incorrect Consist (7%):** BNSF working to address convergence fault issues, caused by invalid consist data, mostly due to isolated state issues and braking force calculations. *BOS updates started, and will continue over the next 2 months*.

**P-Codes** *(Target: ≤ 200 total open; Current value = 323)*

## **Figure 7**: Total P-Codes Open

* Current week: 323 total open
* Previous week: 388 total open
* Previous 4 Week Average: 371 total open
* P-Codes are being closed (started 9/6/16) and trains are being put into projects where there is a known issue. If the issue could be resolved with a reboot, the P-Code is closed, and the O.C. desk will assist with the reboot process during initialization.

## **Figure 8**: Opened P Codes Suspected Root Cause

**Action Plan for Top 5 Opened P-Code Root Causes:**

1. **220 Radio (22%):** BNSF Mechanical Project 057S and 024S are underway.
2. **746 Wiring (20%):** BNSF Mechanical Project 022S is underway.
3. **Wiring Other (14%):** BNSF Mechanical Project 034M, 058S and additional throttle wiring issues found in 022S
4. **Horn Wiring (14%):** BNSF Mechanical Project 034M is underway, these are re-work locomotives.
5. **Wheel Tach Wiring (12%):** BNSF Mechanical Project 058S is underway.