RSAC

Wayside Detectors Working Group

Status Update

March 21, 2024

U.S. Department of Transportation
Federal Railroad Administration

Working Group Task Statement

- **Purpose**: To consider and review issues related to wayside detectors, including analyzing existing regulations and guidance, accidents, incidents and performance data, safety complaints, and existing best practice.

- **Output**: Recommendations and/or proposals to update existing regulations and guidance, and/or develop new regulations regarding some or all of the following areas relating to wayside detector equipment and operation:
  - Definition of wayside devices(s)
  - Location, configuration, installation, inspection, test, repair and maintenance of wayside detectors
  - Integration and interface of wayside detectors with other railroad subsystems
  - Communication, reporting and validation of wayside detector measurement, data and alarms
  - Decision processes and thresholds, including communications and reporting action to avert accidents and incidents
  - Enhanced supervisory procedures

- **Timescale**: 180 days for the first initial deliverables

U.S. Department of Transportation
Federal Railroad Administration

Key: √ - complete
      # - in process
      o – not started

- **Task 1: Define and Identify Wayside Detector types and quantities**.

- **Activities Complete**:
  - ✓ Identify all wayside detector technology currently in use
  - ✓ Identify wayside detector technology current in test or under development
  - ✓ Develop a definition of wayside detector
  - \# Identify cost associated with installation and maintenance of wayside detector systems

- **Completed during the February 29th WG Meeting**
  - ✓ A list of 32 known detector types and placed them into 4 type categories (Rolling Stock; Infrastructure; Environmental; and Intrusion)
  - ✓ Concurred with the Wayside Detector definition: *A Wayside Detector is a device or system installed on the right of way to monitor rolling stock, components, track, or environmental conditions to produce actionable and/or performance data to the handling railroad, or directly to the train crew.*
  - ✓ Focus our efforts on hot bearing detectors, hot wheel detectors, and High-Wide Load Detectors.

- **FRA Lead**: Gabe Neal, Staff Director, Signal, Train Control & Crossings Division

U.S. Department of Transportation
Federal Railroad Administration

Working Group Sub-Tasks – Task 2 Status

- **Task 2: Review and Evaluate Safety Accident and Incident History**

- **Activities Complete**: Data provided by WG members
  - \# Identify accidents and incidents caused by developing rolling stock faults and review the root-cause
  - \# Identify accidents and incidents caused by conditions that are monitored by wayside detectors that require immediate action, such as wind, water, seismic, tunnel size, etc., and review the root-cause
  - \# Identify other accidents and incidents that may be monitored by wayside detector technology that is currently in test or under development
  - o Identify safety complaints, if any, involving wayside detection equipment, its use, maintenance, or management

- **Next Steps**:
  - o Focus data on hot bearing, hot wheel and high-wide load detector caused accidents
  - o Perform data analysis
  - o Present data to WG

- **FRA Lead**: Ricky Huggins, Staff Director, Incident Management, Accident Reporting & Analysis Division

- **Task 3: Analyze Installation, Calibration, Test, Repair and Maintenance processes and practices**

Key: √ - complete
      # - in process
      o – not started

- **Activities Complete**: FRA collected some data as part of HHFT route assessment, currently requesting copies of industry guidance
    - \# Typical quantities and locations of use
    - \# Methods of calibration, test, and maintenance, including frequency
    - \# Method of determining failures and repair requirements
    - \# Skills and training required

- **Next Steps**:
    - o Review industry guidance
    - o Convene a sub-working group to review

- **FRA Lead**: Gabe Neal, Staff Director, STC&C Division

         Gary Fairbanks, Staff Director, MPE Division

Working Group Sub-Tasks – Task 4 Status

- **Task 4: Analyze Communication and Reporting Methods**

- **Activities Complete**: FRA audit of Class I process for actioning wayside detector information nearing completion.
    - \# Current Alarm Thresholds
    - \# Frequency and method of reporting general status and health
    - \# Availability and location of historical data (by detector, location, etc.)
    - \# Where and to whom reports and alarms are sent (e.g., mechanical department)
    - \# Method of trend analysis performed

- **Next Steps**:
    - o Consolidate current processes
    - o Convene a sub-working group to review

- **FRA Lead**:   Chris Holt, Staff Director, OP Division

U.S. Department of Transportation
Federal Railroad Administration

Working Group Sub-Tasks – Task 5 Status

- **Task 5: Analyze Decision Process for Actions to Avert Accidents and Incidents**

- **Activities Complete**: FRA audit of Class I process for actioning wayside detector information nearing completion.
  - \# Who takes action when a detector alarms (Engineer, Conductor, Dispatch) and what is the action (e.g., suspect defect inspected at the next Class I inspection)
  - \# Who evaluates trend data and what is the decision process for actions to avert safety incidents and accidents
  - \# Who takes action based on any trending concern and how is this communicated to the Engineer and Conductor
  - \# Who is responsible for ensuring proper operation of wayside detectors
  - \# Who is responsible for evaluating historical data to evaluate any update required to alarm thresholds, trending algorithms and/or the decision process

- **Next Steps**:
  - o Consolidate current processes
  - o Convene a sub-working group to review

- **FRA Lead**: Chris Holt, Staff Director, OP Division

U.S. Department of Transportation
Federal Railroad Administration

Working Group Sub-Tasks – Task 6 Status

- **Task 6: Prepare Recommendations**

- **Activities Complete**:
    - \# Identify best practice (hot bearing, hot wheel and high-wide detectors)
    - o Propose any updates to existing regulations and/or guidelines
    - o Propose any recommended new regulations using a risk-based approach

- **Next Steps**:
    - o Complete Tasks 1 - 5
    - o Convene a sub-working group to review identify best practices and prepare proposals

- **FRA Facilitator**:   Carolyn Hayward-Williams

U.S. Department of Transportation
Federal Railroad Administration

Contact Us

U.S. Department of Transportation
Federal Railroad Administration

Federal Railroad Administration
1200 New Jersey Avenue, SE
Washington, DC 20590

@USDOTFRA

@USDOTFRA

@USDOT_FRA

@Federal-Railroad-Administration

@Federal Railroad Administration

Carolyn Hayward-Williams
Email: c.hayward-williams@dot.gov

Gabe Neal
Email: gabe.neal@dot.gov

Gary Fairbanks
Email: gary.fairbanks@dot.gov

Chris Holt
Email: chris.holt@dot.gov