



# RSAC

## Wayside Detectors Working Group

### Status Update

October 26, 2023

# 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:** 120 days\*

*\* Anticipate this working group to require ~90+ more days (estimated completion March/April 2024)*

# Working Group Sub-Tasks – Task 1 Status

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

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

- **Activities Complete:** Meeting held on September 6

- ✓ Identify all wayside detector technology currently in use
- ✓ Identify wayside detector technology current in test or under development
- ✓ Develop a definition of wayside detector
- o Identify cost associated with installation and maintenance of wayside detector systems

- **Next Steps: Present Proposals at the next WG Meeting**

- o A list of 32 known detector types and placed them into 4 type categories (Rolling Stock; Infrastructure; Environmental; and Intrusion)
- o Drafted a proposed 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.*
- o Propose next steps:
  - The sub-group recommends that we focus on wayside devices or systems and not on-board or car borne devices or systems.
  - The sub-group recommends the Wayside Detector working group focus our efforts on hot bearing detectors, hot wheel detectors, and Wheel Impact Load Detectors.

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

# Working Group Sub-Tasks – Task 2 Status

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

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

- **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 Review and consolidate data
- o Perform data analysis
- o Present data December WG Meeting

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

# Working Group Sub-Tasks – Task 3 Status

- **Task 3: Analyze Installation, Calibration, Test, Repair and Maintenance processes and practices**
- **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:**
  - Review industry guidance
  - Convene a sub-working group to review
- **FRA Lead:** Gabe Neal, Staff Director, STC&C Division  
Gary Fairbanks, Staff Director, MPE Division

Key: ✓ - complete  
# - in process  
○ – not started

# 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:**
  - Consolidate current processes
  - Convene a sub-working group to review
- **FRA Lead:** Chris Holt, Staff Director, OP Division

Key: ✓ - complete  
# - in process  
○ – not started

# Working Group Sub-Tasks – Task 5 Status

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

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

- **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:**

- Consolidate current processes
- Convene a sub-working group to review

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

# Working Group Sub-Tasks – Task 6 Status

- **Task 6: Prepare Recommendations**

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

- **Activities Complete:**

- Identify best practice
- Propose any updates to existing regulations and/or guidelines
- Propose any recommended new regulations using a risk-based approach

- **Next Steps:**

- Complete Tasks 1 - 5
- Convene a sub-working group to review identify best practices and prepare proposals

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





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