

Federal Railroad Administration

Signal and Train Control Division

- Overview
- Roles and Responsibilities
- Major Challenges

George C. Hartman
Staff Director
Signal & Train Control Division

S&TC Division

HQ Staff:

Staff Director, Three Staff Specialists, Two Electronic Engineers

The PTC Branch:

Branch Chief, Two Senior PTC Specialists, A PTC Specialist in each of the eight regions

Field Personnel:

A S&TC Specialist in each of the eight regions, 92 Federal S&TC Inspectors, and 14 State Inspectors

Monitoring compliance of the nation's railroads with the applicable Federal regulations through technically accurate and uniform application of all S&TC-related inspection and enforcement actions, and various other associated activities.

- Inspections - defects and violations (re-inspections)
- Accident investigations
- Complaint investigations
- Waiver investigations
- Activation failure and false proceed investigations
- Audits and special projects

Monitor and provide guidance regarding the successful development, installation, testing, and implementation of Positive Train Control across the industry.

- Approximately 70,000 miles of railroad (out of 270,000 miles total in the USA) and 20,000 locomotives
- Emails, conference calls, and meetings with suppliers and railroads
- Onsite test monitoring of developing PTC systems
- Railroad submitted PTC documentation review and approval (PTCIP, PTCDP, PTCSP)
- Ongoing rulemaking modifications

Part 233 – Signal System Reporting Requirements

Part 234 – Highway Rail Grade Crossing Signal
System Safety and State Action Plans

Part 235 – Signal Applications and Waivers

Part 236 – Signal and Train Control Rules,
Standards, and Instructions

Newest Subpart I – Requirements for Mandated PTC

2013 Signal & Train Control Inspection Data

Region	Inspection Reports	Inspection Days	Units	Sub Units	Defects Taken	Defect Ratio	Recom. Violation	Violation Ratio	Railroads Inspected	Companies Inspected
1	859	802	7629	20523	2967	0.39	28	0.0037	84	2
2	1256	1135	7299	43000	2762	0.38	48	0.0066	135	18
3	1482	1395	15745	40670	3896	0.25	46	0.0029	114	7
4	988	867	7435	16094	2138	0.29	51	0.0069	109	10
5	868	752	7005	23302	1693	0.24	27	0.0039	113	2
6	882	682	5547	13223	1732	0.31	107	0.0193	79	9
7	980	852	6687	31406	1897	0.28	16	0.0024	103	6
8	598	573	4110	26752	3311	0.81	137	0.0333	62	5
Total	7913	7058	61457	214970	20396	0.3319	460	0.0075	799	59

7, 913 Signal & Train Control Inspection Reports

61, 457 Signal Units Inspected

20, 396 Defects Taken – 33% Defect Ratio

460 Violations Recommended - .75% Violation Ratio

Calendar Year 2013:

- Highway-Rail Grade Crossing Collisions: 2,089
- Highway-Rail Grade Crossing Fatalities: 249
- Highway-Rail Grade Crossing Injuries: 952
- Trespasser Fatalities: 462
- Trespasser Injuries: 432
- Activation Failures: 364



Technical Bulletins

- **S-13-01:** Duration of Wayside Horn Sounding at Highway-Rail Grade Crossings
- **S-12-01:** Appropriate Process for the Inspection of Highway-Rail Grade Crossing Warning System Pre-emption Interconnections with Highway Traffic Signals
- **S-09-02:** Necessary Approval for Signal-Related Results of Inspections and Tests; Electronic Recordkeeping

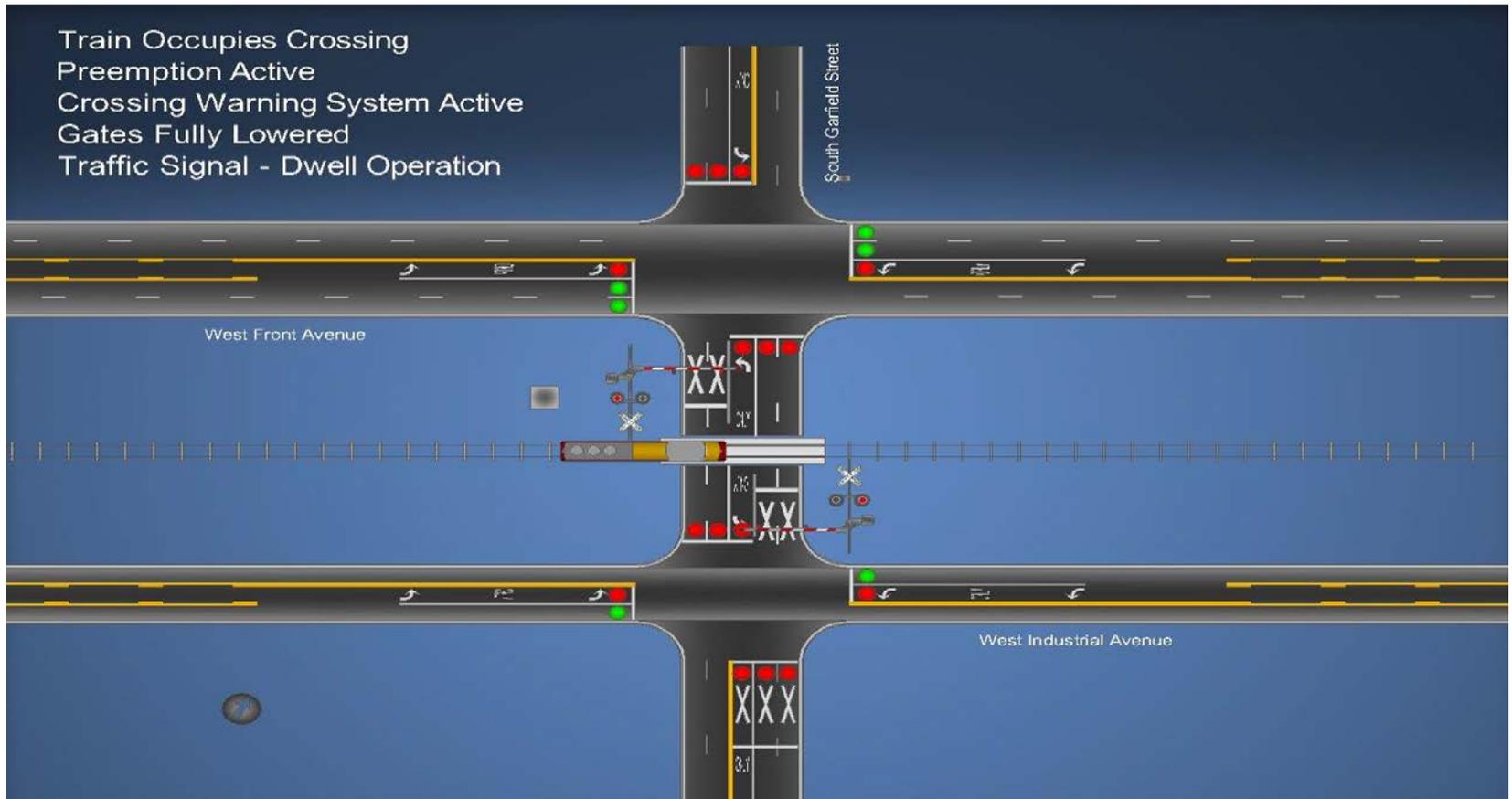
<http://www.fra.dot.gov/eLib>

Safety Advisories

- **Safety Advisory 2013–04**
 - Importance of Procedures for Temporary Removal From Service of Grade Crossing and Wayside Signal Systems
- **Safety Advisory 2010–03**
 - Sounding Locomotive Horn, Especially at/or Near Grade Crossings, Regardless of Whether Located in Quiet Zones
- **Safety Advisory 2010–02**
 - Signal Recording Devices for Interconnected Highway Traffic Signal Systems.

<http://www.fra.dot.gov/eLib>

§234.261 Highway Traffic Signal Pre-emption



Drawing Courtesy of NTSB: Midland, TX

§234.261 Highway Traffic Signal Pre-emption



Drawing Courtesy of NTSB: Midland, TX

§234.309 Emergency Notification System



§234.317 Compliance Dates



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- Roadway Worker Protection for Signal Employees
- Bridge Worker Safety for Signal employees
- Signal Hours of Service Laws – Recordkeeping and Reporting for Signal Covered Service employees
- Signal System and Highway Rail Grade Crossing related Technical Bulletins and Safety Advisories
- Recently Issued a new revised S&TC Compliance Manual

The highest risk to rail safety of signal-related events, are false proceed signals (FP) and activation failures (AF).

- A heavy workload of the entire discipline is in the investigation of each of these occurrences.
- The numbers are trending downward, however too many continue to occur.
- Human factor caused failures remain the number one cause and therefore the top priority and area of focus toward eliminating these type of occurrences.

The significant amount of time and effort that is spent efficiently and effectively handling all forms of information requests, investigations, and related correspondence is widely underestimated.

- Signal-related applications and waivers (avg 20/yr)
- Signal-related complaints or requests (avg 30/yr)
- Signal-related web inquiries (avg 20/yr)
- Special areas of focus (avg 6/yr)
- Guidance requests from the field (avg 45/yr)

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Positive Train Control Challenges and Status

**George C. Hartman
Staff Director, S&TC Division**

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Spectrum

- **Sufficient availability**
- **High density area coverage**
- **Cost**
- **Antennas**

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Interoperability

- **Final specifications**
- **Compatibility of different systems**

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Availability & Reliability

- **Limited suppliers**
- **Still in testing phases**

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Scope

- **Where PTC is required**
- **Modified requirements of Final Rule**
- **Limited Exceptions**

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Cost

- **Unfunded Mandate**
- **Other railroad projects deferred**
- **Installation cost \$5.5 billion**

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PTC Implementation Plans

- **44 Plans submitted by railroads**
- **37 Host railroads installing PTC**
- **7 class 1's and 29 smaller railroads**

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PTC Type Approvals

- **Seven Type Approvals Issued**
- **ACSES II, ACSES II Non-ATC**
- **ETMS VI, IETMS**
- **EATC**
- **CBTC**
- **ASES**

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PTC Field Testing Seven Railroads in 14 states

- **BNSF**
- **Canadian Pacific**
- **CSX**
- **Norfolk Southern**
- **Union Pacific**
- **Alaska Railroad**
- **Metrolink**

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PTC System Certifications

- **ACSES II (Amtrak NEC)**
- **ITCS (Amtrak Michigan)**
- **ETMS VII (BNSF)**

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PTC will start as an overlay to existing methods of operation and signal systems which will require expertise from the railroad's signal department to help enable deployment and provide testing and maintenance for elements of this critical safety enhancing technology.

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Questions...