

Passenger ECP Brake Equipment

Past – Present – Future

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The NGEC will provide national leadership in standardization, acquisition, financing and management of passenger rail equipment.

Topics

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What is Passenger ECP?



26C Technology

- Existing passenger pneumatic brake technology was developed in the 1950's
- Diagnostics expected in today's equipment would be difficult if not impractical to apply
- Technology shall be based on the successful implementation of AAR S4200 ECP
- Compatible to 26C technology

Passenger ECP Technology – NYAB & Wabtec



NGEC Origins

- During the initial technical specification development, a replacement for the 26C brake controls with a modern system
- The mechanical group realized that a product performance standard was required but not available
- The following text was placed in the initial technical specification



TS 7.2 Brake - General Requirements

All cars shall be equipped with provision for an electrically controlled pneumatic (ECP) brake system. This provision shall consist of a discrete conduit and wiring per AAR Standard S-4200, and particularly AAR Standard S-4210, for redundant implementation of ECP cable-based system in this Specification. The installation shall include a terminal box at each end of the car (for installation of the inter-car jumper cables), a terminal box at the brake manifold, conduit connecting them, as well as, armored cable wiring. The Contractor shall provide appropriate clearance on brake manifolds and adjacent structure to permit installation, servicing and removal of ECP modules. The Contractor shall provide a wiring diagram showing connections of brake controls with the two car end junction boxes to implement ECP braking.



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APTA Involvement

- APTA represents the passenger railroads that are subject to the FRA regulations
- APTA PRESS was established to develop safety standards related to passenger cars and equipment
- APTA was selected to participate in the development of the Passenger ECP Equipment



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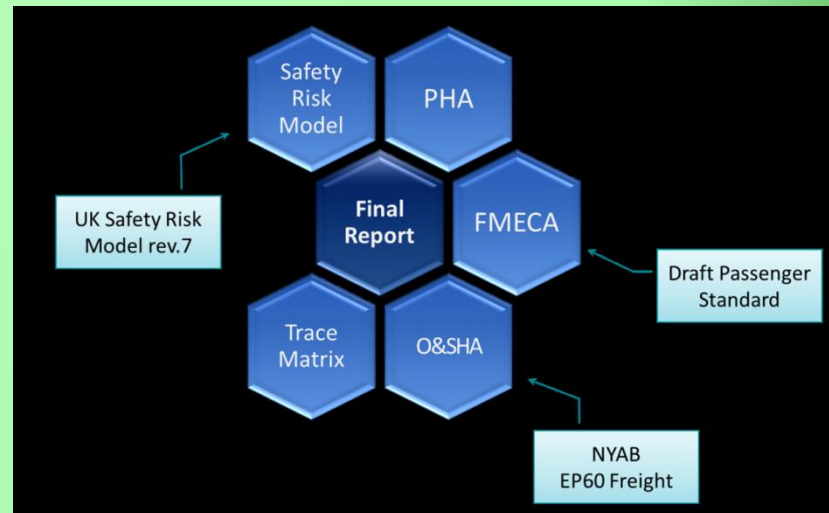
Performance Standard Development

- Two APTA PRESS safety standards have been developed
 - ECP Performance (based on AAR S4200 modified for passenger service)
 - Emulation Performance
- These two standards are complimentary to permit ECP equipped cars to operate with existing 26 brake controls and exclusive ECP train configurations



Safety Analysis

- Performed against the draft APTA Performance Standard
- Funded by an FRA Office of Research and Development grant



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FRA Waiver

- Waiver request was submitted July 14, 2015
- Decision letter was issued February 9, 2016 under docket FRA-2015-0078
- Decision letter confirmed the waiver request with one additional requirement that the train only operate in Amtrak NEC
- Test committee was established consisting of APTA, Amtrak, NGEN members, labor, and other railroads



Emulation Service

- Four ECP Emulation Amfleet cars have been in revenue service (Keystone service) for 2 and 1/2 years)
 - 82610: 400,205 miles since conversion
 - 82628: 376,915 miles since conversion
 - 82629: 385,037 miles since conversion
 - 82637: 400,976 miles since conversion
Through February 5, 2017
-
- All cars have completed eight 120-Day Preventive Maintenance intervals successfully



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Static Testing

- Interoperability Test
 - Week of September 26, 2016 - NYAB Watertown, NY
 - Demonstrated that the NYAB and Wabtec equipment meet the performance standard requirements and could operate in a train configuration



Actual Train Testing

- Week of October 31, 2016 - Amtrak Penn Coach Yard Philadelphia, PA
- Locomotive, coach cars & cab cars commissioned separately and as a train configuration – loco 670; coaches 82610, 82628, 82629 & 82637; and cab car 9644



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Dynamic Testing

- Testing was conducted on November 4 – 6, 2016 on the NEC near Perrysville, MD
- Testing consisted of stopping distance form various speed and ride quality
- Final reports from the interoperability, static train and dynamic train testing was submitted to the FRA to support the Revenue Service Demonstration



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Revenue Service Demonstration

- FRA did not take exception to the Revenue Service Demonstration
- The ECP train entered revenue service on Monday, February 6, 2017
- Accumulated mileage until February 20, 2017 – 29,160 fleet miles
- Train will operate in Keystone Service between Harrisburg, PA to New York, NY making one round trip daily
- Train will be operated as complete unit for the ECP equipment continuous maintenance demonstration



Revenue Service Demonstration

February 7, 2017



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Next Steps to Completion

- Monitor and report ECP train performance on a bi-annual basis to the FRA
- Develop the maintenance interval for ECP equipment
- Complete the 9 standards required for the ECP equipment including the approval process
- Provide recommendation for 49 CFR 238 updates



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Thank You



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