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To: Regional Administrators
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A positive train control (PTC) system is a signal system.¹ Accordingly, installing, repairing, or maintaining a PTC system is signal covered service under the hours of service laws (HSL), and subject to the Federal Railroad Administration's (FRA) hours of service recordkeeping regulations.² FRA has received internal and external requests for information about the application of the HSL to functions associated with PTC system installation, repair, and maintenance. This bulletin provides a general framework for evaluating whether particular functions are or are not covered, and the examples included are for illustrative purposes only and are not intended as exhaustive lists of covered or non-covered tasks in each category.

¹ See, e.g., "The Federal Hours of Service Laws, Hours of Service Recordkeeping and Reporting Regulations, and Signal Covered Service," Technical Bulletin S-14-01 ("2014 Technical Bulletin"), at 4.

² 49 U.S.C. §§ 21101(4), 21104; 49 C.F.R. part 228.

Manufacturing

Under the HSL, manufacturing is not included in the scope of signal covered service.³ FRA considers the production and design of signal system hardware and software not performed on railroad property to be outside the scope of signal covered service.⁴ Therefore, production and design of PTC components, subsystems, and systems off railroad property **are not** signal covered service. Nevertheless, in addition to railroad employees, the HSL apply to contractors and subcontractors of railroads engaged in the installation, maintenance, or repair of signal systems, so vendors are not categorically excluded.⁵

Manual Labor

FRA considers “manual labor” — such as digging trenches for laying signal cable, setting cases or bungalows, or erecting signal masts — to be outside the scope of signal covered service.⁶ This exclusion applies to general manual tasks not affecting the proper functioning of signal systems, subsystems, or safety-critical components of such systems.⁷ Similarly, manual labor related to a PTC system **is not** signal covered service.

³ 49 U.S.C. § 21101(4).

⁴ *See* 2014 Technical Bulletin, at 5–7.

⁵ 49 U.S.C. § 21104(a).

⁶ 2014 Technical Bulletin, at 5; *see also* “The Federal Hours of Service Laws and Signal Service,” Technical Bulletin G-00-02 (“2000 Technical Bulletin”), at 6.

⁷ FRA has employed various formulations of the extent of covered service — some narrower (*e.g.*, “directly affecting the proper functioning of signal systems”) and some broader (*e.g.*, “could reasonably be expected to have the potential for affecting the proper and safe functioning of signal systems”). 2014 Technical Bulletin, at 5. The formulation “affecting the proper functioning” has been deliberately selected and captures FRA’s overall approach to signal covered service over the decades.

The following are examples of manual labor (*i.e.*, **not** covered service) in the context of PTC system-related work:

- Creating mounting points for PTC system equipment;
- Erecting wayside towers;
- Constructing and maintaining signal system housings;
- Maintaining climate control devices; and
- Physical installation of a back office server.

Wiring

Work involving the wiring of a signal system is not categorically inside or outside the scope of signal covered service.⁸ As in other contexts, the touchstone is whether a particular wiring task affects the proper functioning of the signal system. To resolve that question, FRA looks at the task's relationship to the level of system, subsystem, or safety-critical functional risk, the actual safety conditions that may be affected, the degree of signal expertise required, and the frequency with which such duties are performed by the particular employee.⁹ The following wiring task examples **are not** signal covered service in the context of PTC system-related work:

- Creating conduits or running cable without permanently landing or splicing the cable; and
- Making wiring connections with plug connectors or keyed wire harnesses.

⁸ *E.g.*, 2014 Technical Bulletin, at 5 (“For instance, during the initial installation of a signal system, a signal employee may assist in the securement of signal line wires or aerial cables to poles. Such work is not ordinarily viewed as covered service. On the other hand, the securement and/or splicing of line wire or aerial cable conductors of an operational signal system is covered service.”).

⁹ 2014 Technical Bulletin, at 5.

The following wiring task examples **are** signal covered service in the context of PTC system-related work:

- Landing, terminating, splicing, or otherwise connecting individual wires; and
- Hardware replacement that requires removing and re-attaching individual wires.

Testing

In general, testing signal systems, subsystems, or safety-critical components of such systems is a part of installation and maintenance and, therefore, is signal covered service.¹⁰ PTC system functional verification and validation (often called “V&V”) testing,¹¹ regression testing, and PTC system commissioning constitute signal covered service. Even so-called “self-tests” constitute signal covered service when the employee interacting with the signal system must perform specific processes, monitor the progress of the test, or interpret the results. An employee supporting field testing, including from an office location, is performing signal covered service. Nevertheless, FRA recognizes that certain PTC systems may employ more sophisticated self-diagnostics that require no special expertise or are entirely automated. FRA also recognizes the efficiencies gained by lab testing that is followed by comprehensive field testing. The following testing examples **are not** signal covered service in the context of PTC system-related work:

- Testing requiring no interpretation of results or additional actions on the part of the administering employee, such as an initialization test performed by the PTC system itself in response to the locomotive engineer engaging the system for departure;

¹⁰ See 2014 Technical Bulletin, at 6.

¹¹ Verification in a system life cycle context is a set of activities that compares a product of the life cycle against the required characteristics for that product. Validation in a system life cycle context is the set of activities ensuring and gaining confidence that a system is able to accomplish its intended uses, goals, and objectives.

- Cursory interaction with the system, such as initiating a test that simply reports success or failure; and
- Lab testing that is followed by comprehensive field testing.

Communications Hardware

For purposes of implementation, PTC system hardware is broadly defined to include an array of communications equipment, including locomotive radios, wayside radios, base station radios, back office communication equipment, and even communication towers or poles.¹² For purposes of covered service, however, FRA has long distinguished between the signal system and the communications infrastructure used to integrate the system into the broader railroad infrastructure.¹³ Work on the communications medium transmitting data already encoded is not signal covered service. FRA maintains that distinction in the context of PTC system implementation and maintenance.

Although PTC systems rely on communications infrastructure, for example, to link the locomotive hardware and wayside radios and interface units, FRA only considers installing, repairing, or maintaining locomotive and wayside equipment that encodes or decodes transmissions (*e.g.*, a wayside messaging server) to be signal covered service. Most work on the communications medium — including communications towers and poles — **is not** signal

¹² For example, the statutory definition of PTC system hardware includes “a locomotive apparatus, a wayside interface unit (including any associated legacy signal system replacements), switch position monitors needed for a positive train control system, physical back office system equipment, a base station radio, a wayside radio, a locomotive radio, or a communication tower or pole.” 49 U.S.C. § 20157(i)(2).

¹³ See “The Hours of Service Act and Signal Service,” Booklet, Dec. 1981, at 5 (“Maintaining signal-specific apparatus to input or extract coded controls transmitted on a ‘host’ microwave or carrier band system is covered service[,] but not [m]aintaining the microwave transmitter or conductor used as the communications medium.”); 2000 Technical Bulletin, at 5.

covered service. Nevertheless, connecting, testing, replacing, or reconfiguring PTC locomotive and wayside interface equipment **is** signal covered service if that equipment encodes or decodes train control information.

Software

PTC systems include microprocessor-based subsystems, and software is a critical component of such systems. In general, FRA considers work affecting the proper functioning of software to be signal covered service, whether in the field or in an office location.¹⁴ Loading, verifying, or testing software or configurations into PTC system hardware **is** signal covered service.

Nevertheless, FRA recognizes limited exceptions consistent with its position on testing.

Downloading PTC system software updates when the administering employee need not perform specific processes, monitor the progress, or interpret the results **is not** signal covered service.

¹⁴ See 2014 Technical Bulletin, at 6.