



TYPE APPROVAL

The Federal Railroad Administration (FRA) hereby finds that the following Positive Train Control (PTC) system meets the minimum requirements to receive a Type Approval for a PTC system required by Section 236.1013 of Title 49 Code of Federal Regulations (CFR).

PTC System:

Advanced Civil Speed Enforcement System (ACSES) II

Accordingly, FRA issues this PTC system the Type Approval number provided above.

For Federal Railroad Administration

1200 New Jersey Ave. SE

Washington DC 20590

A handwritten signature in black ink, appearing to read "Grady C. Cothen, Jr." with a stylized flourish at the end.

Grady C. Cothen, Jr.
Deputy Associate Administrator
for Safety Standards and Program Development

Date of Issue: May 27, 2010

This Type Approval is not valid if presented without the full attachment schedule comprised of seven (7) sections. This Type Approval remains valid for the timeframe established by 49 CFR § 236.1013(c). This Type Approval will not be valid if the applicant makes any modifications to the PTC system without FRA approval, where necessary, in accordance with 49 CFR § 236.1021.

This Type Approval consists of 5 pages

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION

1.1 Purpose

ACSES II is the latest version of Advanced Civil Speed Enforcement System, originally designed and manufactured by Alstom Signaling, Inc. to serve as an overlay to an Automatic Train Control (ATC) system comprised of a Cab Signaling System (CSS) and a Speed Control System (SCS) that provides automatic enforcement of permanent and temporary speed restrictions and positive train stops at each interlocking home signal and each controlled wayside signal displaying a stop signal aspect.

1.2 Main System Components

ACSES II comprised of the following components designed, built, operated, and maintained to the specifications in Section 2 of this Schedule of Approval:

1.2.1 Onboard Computer (OBC) with vital Main Board (SW Rev. 7) and associated locomotive hardware interface units, including ACSES/ATC Display Unit (ADU) (SW Rev. 2).

1.2.2 Passive (fixed message) Transponders (Rev. B) at wayside locations and Onboard Transponder Reader comprised of Scanner Antenna (Rev. C), Process Speed Board (Rev. B-4), Television Compatibility (CTV) box (Rev. A), and Central Unit 20 Board UC20 (Rev. A).

1.2.3 Encoder comprised of Vital Central Sequencing Unit (UCS) (SW Rev. 1.2.3) and non-vital Radio Transmission Module (TRM) Board (SW Rev. 1.2.5).

1.2.4 Safety Temporary Speed Restriction (TSR) Server (STS)/2oo3 platform [2 out of 3 platform] (Rev. 2.0) with Safety TSR Server Application Software (SW Rev. 6.3.5).

1.2.5 Network Server (SW Rev. 3.1).

1.2.6 Data Radio system using ATCS (Spec. 200) communication protocol at 900 MHz frequency that includes Base Communication Package (BCP) (SW Rev. 4.55) at the interlocking locations, Mobile Communication Package (MCP) onboard (Rev. C), and Wayside Communications Controller (WCC) (SW Rev. 5.1) at a central location.

1.2.7 Databases installed in transponders and encoders, and Fixed Database used by Safety TSR server (databases are to be site-specific).

2. DOCUMENTS AND DRAWINGS

2.1 Manufacturer's specifications: Alstom Transport, ACSES II System Specifications SIU-ACSES-SS-ACSESII-Revision 06.00.00, 15 September 2004.

2.2 Data Radio Communication Specifications: Alstom Transport, ACSES Ground Network (GN) Interface Specification ACSES-0-GN-IS-S-Revision 01.00.00, 17 November 2004.

2.3 ACSES System Operation and Maintenance Manual ACSES-0-0-SO&M-S-Revision 01.00.01

2.4 Configuration Management Plan, Revision 1.0, 16 March 2010.

Note: Installation and test procedures are to be site-specific and may be produced by the entities purchasing the product or by the designated contractor.

3. APPLICATIONS, LIMITATIONS, AND PROVISIONS

3.1 Application

ACSES II may be used to achieve PTC functionalities required by 49 CFR part 236, subpart I on railroad properties that already employ or plan to augment the existing signaling system with cab signaling and speed control (ATC) systems.

3.2 Limitations

3.2.1 The use of ACSES II assumes employment of a cab signaling and speed control system that performs train separation function.

3.2.2 All transponder and radio communication messages must use the ATCS Spec. 200 message format. All transponder messages must comply with "ACSES II system Specifications." All radio messages must comply with "ACSES GN Interface Specifications" in Section 2.2. The application message structure must utilize the 255-bit application data segment, including 72-bit CRC protection structure and techniques for message validity as defined in ACSES II specifications (Section 2) for interfaces with the OBC, including the Transponder and Data Radio messages.

3.2.3 The maximum operational speed with ACSES II-equipped components is 150 mph.

3.3 Provisions

3.3.1 Active (switch message) transponders can be alternatively used to transmit ACSES II messages to the train in specific locations. The application message must have the same length and structure as described in Section 3.2.2 to be readable by the OBC.

3.3.2 The definition of ACSES II includes delivery of Temporary Speed Restriction (TSR) data by radio. As a temporary solution when delivery by data radio is not available, TSR data can be delivered to the train through temporary transponders properly encoded.

3.3.3 As an alternative to the TSR server specified in item 1.2.4 of this document, the applicant can employ the updated version of safety STS server, TSR delivery network, and an updated dispatcher interface. For the use of these alternatives, FRA agreement is required.

3.3.4 For the data radio system, ACSES II utilizes the 900 MHz spectrum with the media access control layer ALOHA or Carrier Sense Multiple Access (CSMA). The alternative solutions are allowable if an equivalent or better performance and reliability of radio transmission is proven. This provision is made for future expansion of the ACSES II system and for interoperability with passenger and commuter railroads' locomotive fleet operating on the same network. For the use of the alternative data radio system, FRA agreement is required.

4. TYPE APPROVAL VALIDITY

This Type Approval shall remain valid without further FRA approval if any of the ACSES II components listed in Section 1.2 are modified without the need to file a Request for Amendment (RFA) in accordance with 49 CFR § 236.1021.

Any modification to ACSES II hardware or software components listed in Section 1.2 that require the filing and approval of an RFA of this Type Approval in accordance with 49 CFR § 236.1021 may require a new Type Approval for the system. Clarification regarding the categories of modifications requiring the filing of an RFA may be sought by conferring with FRA's Office of Safety Assurance and Compliance.

Pursuant to 49 CFR § 236.1009(f), if the applicant modifies in any way the components listed in Section 1.2, it shall supply information proving that the new components have undergone full conformance testing, have met all software safety criteria, and will not in any way compromise safety.

5. PRODUCTION SURVEY REQUIREMENTS

ACSES II is to be manufactured and installed in accordance with the system described in this Type Approval. Conformance testing of the installed system must be performed to assure that the product faithfully implements the specifications and meets the interoperability requirements. The documentation on conformance testing of ACSES II hardware and software must follow a standard format that includes: the description of the product, condition to claim conformance, core profile, extension profile (if applicable), implementation defined features, alternative features (if applicable), reference implementation used, and conformance test suite used.

FRA reserves the right to attend tests and examinations of installation work and to perform relevant audits.

6. SYSTEM CERTIFICATION PROCESS FOR THE USERS OF THIS TYPE APPROVAL

This Type Approval does not constitute PTC System Certification for revenue operation. In order to obtain PTC System Certification for the system designed and built using ACSES II architecture under this Type Approval, the applicant referencing this Type Approval must fulfill all the requirements of 49 CFR part 236, subpart I.

7. DISCLAIMER

The United States Government and its employees: make no warranty, express or implied, including the warranties of merchantability and fitness for a particular purpose; assume no legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, system or process disclosed; and do not represent that the use of this Type Approval would not infringe privately owned rights.

Reference herein to any specific commercial products, processes, systems, or services by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government, and shall not be used for advertising or product endorsement purposes.

End of Type Approval