

NARRATIVE STATEMENT

A. Introduction and Background

Pursuant to Section 5.3(d), (g) and (i) and Section 5.51 of the Commission's rules, 47 C.F.R. §§ 5.3(d), (g), (i), 5.51 (2011), GTC Spectrum Corporation ("GTCS"), respectfully requests an experimental radio license for a term extending through December 31, 2014, so that it may conduct propagation and functionality tests of a prototype system operating in the 220-222 MHz band to support the implementation of Positive Train Control ("PTC") technology as mandated by Congress.

In addition, CN respectfully requests expedited treatment of this request, so that it may commence tests on or before July 15, 2013. Justification for such action is attached separately in the "Request for Expedited Treatment" accompanying this application.

The following information is provided in support of this request:

B. Company Background and Proposed PTC System

GTCS is a wholly-owned, indirect subsidiary of Canadian National Railway Company ("CN"), and holds FCC authorizations that support CN's U.S. rail operations. Canadian National Railway Company, through its U.S. rail operating subsidiaries (collectively, "CN") operates approximately 6150 route-miles of track in 15 U.S. states: Alabama, Illinois, Indiana, Iowa, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, Nebraska, New York, Ohio, Pennsylvania, Tennessee and Wisconsin. Additional information about the company is available at <http://www.cn.ca/en/about-cn.htm>.

PTC is a communications-based traffic control system mandated by the U.S. Congress for all of the largest U.S. railroads, including CN, pursuant to the Rail Safety Improvement Act of 2008, 49 U.S.C. § 20157, and implementing regulations of the Federal Railroad Administration (FRA), 49 C.F.R. § 236.1001 *et seq.* PTC is designed to prevent train-to-train collisions, over-speed derailments, incursions into established work zones, and unintended movements of trains through switches. Such events jeopardize the safety of not only railroad personnel, but also passengers and the public. PTC will be required on lines over which intercity or commuter rail passenger transportation is regularly provided and on lines over which hazardous materials such as chlorine used for drinking water may be transported. Effectively, PTC technology must be implemented throughout much of each railroad's network.

More importantly, Congress has mandated that PTC be implemented by December 31, 2015. The FRA is overseeing and monitoring each railroad's implementation progress. PTC technology is a highly complex and untried system, which requires (i) the development of new communications

equipment and software, (ii) acceptability and functionality testing through pilot programs, (iii) interoperability testing among all of the railroads' PTC systems, and (iv) FRA certification. Thus, the deadline for its required completion is demanding and one that cannot be met if implementation is unduly delayed.

Key components of PTC design are the so-called wayside interface units ("WIUs"), which will monitor and confirm the status of track switches and trackside signals and convey that information to a centralized location using radio transmissions in the 220 MHz frequency band. Those transmissions will occur via facilities located along the tracks. CN is in the midst of constructing approximately 1,500 of such radio-hosting facilities to implement PTC by the mandated deadline. Thus, CN is subject to a tight implementation schedule and a narrow window to conduct tests due to weather considerations and the need to reserve free track-time without interfering with the activity of an operating railroad.

C. Purpose and Scope of Experimentation

Industry research and development in PTC technology has reached a stage that now requires "real-world" field tests, operational trials, and proof of concept evaluations to determine the acceptability and reliability of PTC communications capabilities. In the long term, these capabilities will be provided by PTC systems licensed under Part 90 of the FCC's rules. In the meantime, however, GTCS proposes to test and analyze the functionality of PTC technology to meet industry needs under the authority requested herein.

Specifically, GTCS proposes to conduct experimental operations along its track rights-of-way ("ROW") in two limited geographic areas as set forth in the accompanying application on Form 442. The first is referred to by CN as the "McComb Subdivision," which is in and near McComb County, Mississippi, and comprises its operations between Jackson and New Orleans. The second area is referred to as the "Baton Rouge Subdivision," which is in and near Greater Baton Rouge, Louisiana, and comprises its operations between Baton Rouge and New Orleans.

To obtain statistically valid engineering results, GTCS must conduct experimental operations with a sufficient number of facilities to mirror real world operations. Accordingly, GTCS respectfully requests authority to operate up to 150 temporary fixed base stations and up to 75 mobile units in connection with its pilot program. It notes that these numbers represent only a small fraction of the facilities that will ultimately be constructed for the PTC system. As described above, GTCS anticipates that the individual PTC facilities ultimately deployed by GTCS will number approximately 1,500. GTCS also notes that it has identified the base station facilities as "temporary fixed" because the radio facilities deployed might change during the course of the experimentation. Most of the base station facilities deployed as part of this test will be installed on existing antenna structures, however. Moreover, before completion of the experimentation, GTCS will seek permanent or site-based authority under Part 90 of the FCC's rules for those sites it has determined will be operated as non-temporary or "fixed base" station.

D. Technical Specifications

Application Type/Classification: XD (Experimental Developmental)

Frequency Band 220-222 MHz

Modulation: 4FM and $\pi/4$ DQPSK

Bandwidth/Emissions Designators: 17K8DXW, 8K90DXW

GTCS seeks to employ various modes of modulation, bandwidth and data rates. Nevertheless, none of these modes of operation would extend beyond the limits set forth for 220-222 MHz band

Power Limits:

Temporary fixed transmitters will conform to Part 90 of the Commission's Rules.

Transmitter Power Output (TPO): 25 to 50 Watts Peak Envelope Power (PEP)

Effective Radiated Power (ERP): 45 to 95 Watts PEP

Mobile power will also conform to Part 90 of the Commission's Rules and are:

TPO: 50 Watts PEP

ERP: 50 Watts PEP

E. Operational Safeguards

GTCS recognizes that its experimentation must not cause harmful interference to authorized facilities. GTCS does not anticipate that such interference will occur, however, as it will operate only on channels approved by and coordinated with PTC-220, LLC, the existing licensee in the geographic areas covered by the pilot program. Indeed, GTCS expects that certain aspects of its experimentation will be conducted with the cooperation of PTC-220.

Moreover, notwithstanding the power levels specified in Section D above, GTCS will limit the power and transmitting times of these units to the minimum necessary to evaluate the equipment. It also intends to monitor use of the relevant channels before commencing transmissions, and it will not operate if the frequencies are in use.

Should interference occur, however, GTCS will immediately take steps to resolve the interference, including if necessary discontinuing operation.

F. Responses to Form 442

GTCS has responded "N" to the question on FCC Form 442, which asks "Is applicant a foreign government or a representative of a foreign government?" As the radio station authorizations associated with this request are not subject to the limitations of Section 310 of the Communications Act, it has responded "N" to indicate that the question is "Not applicable." GTCS is a Delaware corporation and a wholly-owned subsidiary of CNR's U.S. subsidiary Grand Trunk

Corporation, which is the holding company for CNR's U.S. rail operating subsidiaries. CNR is a Canadian company.

In addition, Form 442 asks "Would a commission grant of this application come within Section 1.1307 of the FCC Rules, such that it may have a significant environmental impact?" GTCS has answered "N" to this question because: (i) facilities authorized under an experimental radio license are excluded from review pursuant to the *Nationwide Programmatic Agreement Regarding Section 106 (NHPA)*, Report and Order (rel. Oct. 5, 2004), at Section III(C)(5); and (ii) its facilities are on the railroad ROW, so it does not expect to encounter environmental issues. GTCS understands, however, that it must comply with FCC rules and regulations governing environmental matters.

Another question on the Form 442 asks, "Will the antenna extend more than 6 meters above the ground, or if mounted on an existing building, will it extend more than 6 meters above the building, or will the proposed antenna be mounted on an existing structure other than a building?" GTCS has responded "N" to this question, as it otherwise must provide for each site the antenna height above ground to tip, the ground elevation above mean sea level, the distance to the nearest aircraft landing area and a description of any natural and man-made formations in the area. As noted above, however, all antennas will be installed in accordance with FAA and FCC rules and regulations. The antennas deployed under this experimental authority will not extend more than 6 meters above the height of a locomotive or 6 meters above the height of a building. Antennas mounted on an existing or new antenna structure will not increase the height of the structure more than 6 meters.

G. Public Interest Statement

GTCS submits that the grant of a license as requested by GTCS would serve the public interest, convenience and necessity, as it would allow the company to enhance its ability to implement PTC technology for the safety and public benefit of railroad personnel and users. Such action would enhance the company's ability to obtain information needed to ensure that the PTC system it ultimately constructs will meet Congressional objectives.

H. Contacts for Inquiries

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