

Exhibit Information

Proposed Program

Many of Union Pacific's locomotives and special-purpose rail cars are equipped with automated tracking systems and equipment, including Global Positioning System (GPS) receivers. The installation facilities where these systems are installed and tested are opaque to GPS signals. We propose to install GPS re-radiating equipment at our installation facilities to allow reception of GPS signals within these facilities. The system will be comprised of an active outdoor receive antenna, a powered splitter, and indoor repeater assemblies. The repeater assemblies consist of variable in-line amplifiers and passive indoor antennas. The system will repeat the GPS signal inside of the building.

The proposed equipment (following), manufactured by GPS Source (64 N. Mission Dr., Pueblo West, CO 81007), is of a design and power output similar to a kit manufactured by GPS Networking, which has been licensed (WC2XSA) to re-radiate GPS signals in convention halls.

Active Roof Antenna: L1A-NF

Powered two-port splitter: S12-A-P110/5-NF

Powered four-port splitter: S14-A-P110/5-NF

Repeater Assembly (Variable in-line amp, passive antenna): GPSRKL1-V-NP-NF

Objectives

We seek to accomplish the following objectives:

1. Illumination of our locomotive facilities with re-radiated GPS signals
2. Test onboard GPS receivers when locomotives and railcars are in installation facilities

Contribution to the Radio Art

Projects are under way at Union Pacific to utilize GPS-derived information (position, speed, heading) in a variety of innovative applications, including, but not limited to:

Automated control of dispatcher radio frequency;

Precision application of rail bed ballast;

Augmentation of event recorder (the locomotive's "black box") data;

Positive train control.