NOVARIANT
Experimental License Application
45700 Northport Loop E.
Fremont, CA 94538

EXHIBIT 2

Explanation of the Project

Technical Characteristics:

The experimental program described in this application involves the establishment of a terrestrial spread spectrum pseudolite that will operate at the center frequency of each frequency band – 3.2 GHz, 5.3 GHz, 8.75 GHz, 13.7 GHz, 16.1 GHz, and 34 GHz. The transmitted signal in each band will be designed to have a bandwidth of approximately 80 percent of the available width of the band, up to a maximum bandwidth of 400 MHz in the wider bands. The transmitted signals are expected to have a general (sin x)/(x) shape.

Transmissions from each pseudolite may be continuous or pulsed. The transmit RF peak power will be under 5 watts, but that power will be spread across the spectrum available in the band used, making the signals difficult to detect. One objective of the program is to investigate the required power levels with the purpose of minimizing power used.

Program Description/Objectives:

In this application, Novariant is seeking to renew its experimental authority to operate six arrays (one for each spectrum band) of between four and six pseudolites around the Novariant laboratory. The first experiments have helped Novariant to enhance pseudolite technology, and further experimentation is required to refine the ways that precision positioning technology is developed.

The applicant's experimental program follows upon the development of technology in the precision location field that emerged from an initiative by the federal agencies responsible for administration of the GPS system to companies that are interested in producing pseudolite systems that augment basic GPS satellite services. Novariant recognizes that it is to bear its own costs in this program. If the proposed tests prove successful, however, many applications could be discovered for this technology.

Contribution to the Development, Extension, Expansion or Utilization of the Radio Art:

The experimental program is based upon the precept that the use of pseudolites will enhance precision guidance and control of a range of vehicles. The potential exists for use of these technologies not only in the field of mining, but also in automated

transportation systems that could reduce traffic congestion and lower polluting emissions – should the technology prove viable after the proposed testing is completed. Pseudolites clearly have the ability to support aviation, particularly aviation safety in low visibility conditions. The objective of this experiment is to determine whether and to what extent pseudolites can also support other safety of life applications, including improved safety in mining operations. They are a complementary use to GPS of the aeronautical radio navigation service/radio navigation-satellite service spectrum in the 1559-1610 MHz band and they enhance the already substantial value of the dual-use GPS utility.

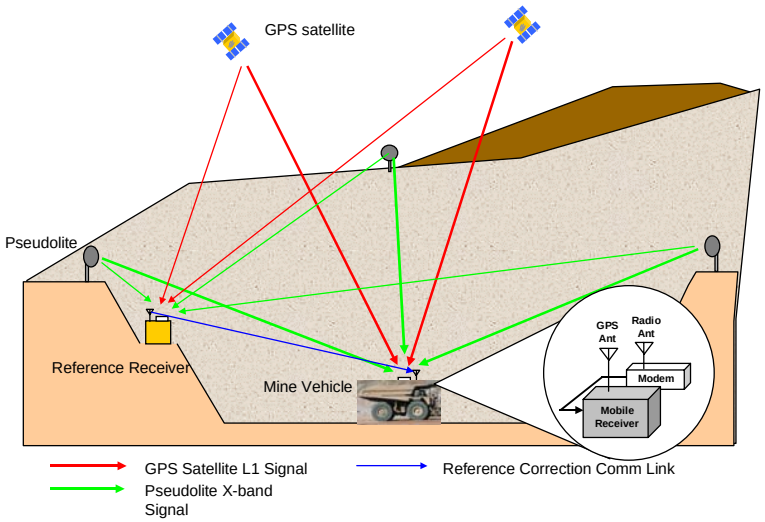
As noted above, there are mining operations that currently rely upon GPS equipment for several stages of their mining operations, including surveying and location of ore bodies, automatic guidance and control of shovel and drill equipment, guidance and scheduling of haul trucks, and guidance of bulldozers. Use of this technology has conserved natural resources by allowing the mining companies to extract only the valuable ore, leaving more of the surrounding area untouched. Further, precision guidance technologies have made the mining operation much more efficient and cost effective. The current tests of Novariant technology have been shown to enhance safety by providing operator guidance and automation for hazardous occupations, such as collision warning systems for haul truck drivers. Additionally, with more precision guidance of heavy equipment, it is possible to work effectively with fewer people in dangerous blast zones or other potentially harmful areas.

The diagrams below depict the signal to be transmitted by these pseudolites and depict a typical installation at a licensed location.

References

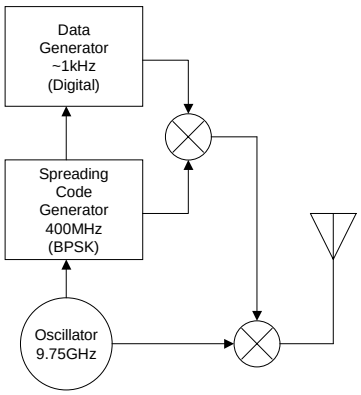
1. Janet A. Flinn , Connie Waddell, and Mary A. Lowery, *Phelps Dodge Morenci, Inc.*, "Practical Aspects of GPS Implementation at the Morenci Copper Mine", in Proceedings of the Institute of Navigation GPS Conference, September 1999, page 915. p.4
2. Optimization of GPS on Track-Dozers at a Large Mining Operation, J.A. Flinn, S.M. Shields, Phelps Dodge Morenci, Inc., in Proceedings of the Institute of Navigation GPS Conference, September 1999, page 927.

Pseudolites for Mining



Slide 2

X-Band Pseudolite Signal Generator (Approximate)



Slide 3

An Operational (L1) Pseudolite Installation