

EXHIBIT 3

Explanation of the Project

Technical Characteristics:

The experimental program described in this application involves the establishment of terrestrial GPS pseudolites operating at the standard GPS L1 frequency as described in Exhibit 1. The pseudolites will transmit various combinations of the signal formats and pulse formats described in Exhibit 2. These combinations cannot be completely specified in advance, because the object of this experimentation is to determine the optimum combinations. The starting point for these experiments will be the signal format and pulse format defined by the RTCA SC-159 committee. Emissions will be confined to the bands previously allocated for GPS signals (bands 24 MHz wide, centered on the L1 frequency).

In general, the pseudolite signals will be transmitted in pulses less than fifteen percent duty cycle, to minimize interference with existing GPS receivers. The peak transmitted power (EIRP) will be 100 milliwatts or less. One objective of the program is to investigate the required power levels and pulse patterns with the purpose of minimizing power used.

Program Description/Objectives:

In this application, Caterpillar is seeking experimental authority to operate pseudolites at these three locations. Operations at these facilities will take place during the period immediately following grant of this application.

The applicant's experimental program is an expansion of research that resulted from an invitation 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. Such companies were invited to test, document and demonstrate prototypes that have been developed using RTCA SC-159 standards. Caterpillar recognizes that it is to bear its own costs in this program. If the tests prove successful, however, and many applications could be discovered for this technology. Caterpillar is working with pseudolites to add precision to the location information that would be available directly from the GPS system and to make it possible to use GPS positioning technology in areas where normally it would be unusable.

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 at the GPS L1 P(Y) code nulls is an augmentation of GPS that will lead to an improvement of GPS services. S

Pseudolites clearly have the ability to support aviation, particularly aviation safety in low visibility conditions. The objectives of this experiment include determining whether and to what extent pseudolites can also support other safety of life applications, including improved safety in mining operations. Specifically, precise location information will result in preservation of natural resources because improved processing of mined materials results in a higher yield of resources and less waste of surrounding land areas. Further, precise positioning allows for safer placement of charges used in blasting at the mining locations. Pseudolite technology offers the possibility of creating much safer and more efficient mining. Phelps Dodge Morenci, which also holds an experimental license for the use of pseudolites, 0323-EX-PL-1999, has published two papers detailing the value of pseudolite technology to open pit mining.

Here are some references:1. Flinn, Janet A., et. al., "Practical Aspects of GPS Implementation at the Morenci Copper Mine", Proceedings of ION-GPS-99, Nashville, TN, 14-17 September, 1999, pp. 915-919.2. Flinn, Janet A., Shields, Scott M., "Optimization of GPS on Track Dozers at a Large Mining Operation", Proceedings of ION-GPS-99, Nashville, TN, 14-17 September, 1999, pp. 927-931.