

Novariant, Inc.
Experimental License Renewal
1350 Willow Road
Menlo Park, California 94025
Call Sign: WA2XYP
Original Application File No: 0097-EX-PL-1999
Renewal Application File No: 0051-EX-RR-2006

EXHIBIT

Explanation of the Project

Technical Characteristics:

In this Exhibit, Novariant presents an explanation of what is proposed under this experimental license.

Spectrum:

The GPS L1 frequencies centered around 1575.42 are being used in this on-going experiment to use GPS to develop precision positioning technologies. These frequencies are phase shifted for pulsed, spread spectrum transmissions, lowering potential interference concerns. These experiments began after IntegriNautics (the former name of Novariant) was granted an experimental license on Nov. 11, 1999 – application number 0097-EX-PL-1999.

The emission designator on this spectrum is G1D. The frequencies will be used consistent with all previous applications, licenses, and limitations.

Signal:

The experimental program described in this application involves the establishment of a terrestrial C/A code pseudolite that will operate at the L1 P(Y) Code null at 1565.19 MHz.

A pulsed pseudolite that adheres to the RTCA SC 159 standard will be used. The duty cycle is 15% and the transmit RF peak power will be under 2 watts. These tests will be conducted indoors at the Novariant test lab. 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 experimental authority to operate several pseudolites separately at its headquarters test lab. Operations at these facilities will continue following grant of this application.

The applicant's experimental program was initiated in response to an invitation from 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. Novariant recognizes that it is to bear its own costs in this program. If the tests prove successful, however, many applications could be discovered for this technology.

Already, the tests of the technology have led to additional experiments in the fields of remote mining and intelligent transportation systems, as well as advanced navigational experiments that may have applicability for remote navigation of the surface of Mars. The experiments are expected to lead to applications that will enhance the safety of life for aircraft as well as for enhancements of highway safety technologies. Adaptations of the pseudolites into terrestrial-based precision positioning systems have been tested in mines and show strong potential to increase the safety of mining operations as well as minimizing environmental damage. Further experimentation with pseudolites may lead to other safety applications.

Work in the past two years – and expected during the renewal term – is leading to resource efficiencies in mining, resource and man-power efficiencies in farming, including reducing pollution by minimizing use of chemical fertilizers, and enhanced safety and resource conservation in the field of construction. Additionally, work with pseudolites continues to be fruitful in the area of navigation of Mars and other non-earthbound locations. It is necessary to undertake further work to prove the viability of the technology in such settings, which is a reason for filing this renewal application.

The purpose of continuing the experiments is to complete the research into the uses of the technology under development. And, to make full use of this technology for aircraft safety, it will be necessary to continue to test the veracity of the data and the integrity of the pseudolite system. For this reason, it is expected that experiments with pseudolites will need to continue for five additional years.

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 is an augmentation of GPS that will lead to an improvement of GPS services. 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.

Questions about this application should be directed to either Stewart Cobb, Novariant, 650-644-1428 or to Anne Linton, Washington Federal Strategies, 301-951-7062.