

Exhibit 4
Section 9

(a) The nature of the research project being conducted:

This project seeks to deliver an autonomous unmanned under water vehicle to the United States Navy. The requested communications facilities will support remote monitoring and control of the unmanned submersible vehicle during testing.

(b) The communications facilities are necessary for the research project involved. During development testing the ADUUV will operate autonomously under water. From time to time, the ADUUV will return to the surface to communicate with the mother ship. During these times the mother ship will send directions (mission plans) and other mission parameters to the ADUUV vehicle. The ADUUV vehicle will send accumulated sensor and performance data to the mother ship. Communications tests will take place at any of the locations listed in Exhibit 2 to verify operation of the communications system prior to at sea testing in order to reduce risk. This mode of communication is specifically required by contract.

(c) The existing communications facilities are inadequate.

This is a new communications facility.

This application will use standard, off the shelf 802.11b communications hardware and seeks only to allow a higher radiated power limit through the use of amplifiers and a directional antenna in order to meet the communications range requirements of the contract. The contract calls for communications at 10Mb/Sec at 1 mile and 1Mb/Sec at 10 miles.

Other communications facilities were considered.

Acoustic (through the water) communications were much too slow and limited in range.

Standard 802.11B communications were fast enough but limited in range due to low power and adverse propagation characteristics in the open ocean, close to the surface of the water and the fact that the vehicle antenna is mounted on a very unstable platform. More power was required to achieve acceptable range and throughput.

Various military radios (Singars, JTTRS) were considered but for reasons of cost, weight, availability, the requirement for crypto key loading, space, compatibility and power consumption, these were deemed unacceptable.