Exhibit B
Program Description

This investigation seeks to perform basic research into the propagation characteristics of electromagnetic waves both underwater and at the air water interface. In order to do this, we will be developing various proprietary antennas which will be designed to enhance the coupling of e-m radiation into the medium. An antenna designed to generate extremely low intrinsic impedance electromagnetic waves capable of being independent of the electrical properties of materials other than attenuation but not guidance nor directionality. Their usefulness is in the ease of penetration for communication and sensing through any low permeability class of materials. High permeability materials require multiple waves at multiple frequencies of these waves.

Further, we will measure the effectiveness of various waveforms, emission types and protocols. It is our intention to feed these antennas with a standard audio amplifier, through a custom matching network. These amplifiers may be standard commercial product or a custom design. Signals to be transmitted will be generated by a laboratory function generator or under software control by a computer sound card, D/A converter or similar custom means. Signals generated in this manner will be directed at a submerged receiver which will be monitored by standard laboratory instruments possibly including a spectrum analyzer, or by a computer with a sound card, A/D converter or by some custom proprietary means. The transmitting antenna will be above but close to the water's surface or even slightly submerged.

Transmitted frequency will be monitored by a frequency counter or spectrum analyzer. Transmitted bandwidth will be monitored by a spectrum analyzer.

The equipment will be portable/mobile and will from time to time be installed on vessels (small boats) and operated from various locations within the test area described below.

Experiments will be conducted at various frequencies below 9 kHz and power levels but principally at 113 Hz, 400Hz and 5kHz. The 10kW power level is requested in order to overcome the high attenuation of seawater.

This investigation seeks to develop means to communicate with equipment submerged in the ocean and underground using the VLF band of the electromagnetic spectrum. Feasibility of detection of submerged and buried objects may also be investigated. The communication of data will be conducted.

This is fundamental research in to the propagation of radio waves in the ocean and underground. This investigation seeks to develop techniques to enable communication with submerged and underground devices. Other areas to be investigated are the improved detection of buried or submerged objects.

Detailed mathematical analysis has been performed that supports the feasibility of this mode of communication. Other organizations are conducting similar investigations into the same area of technology. Preliminary experiments have been conducted at low power levels which indicate feasibility.

Wide band communications with under water devices is a significant problem across the undersea industry. The alternative acoustic means of communication have significant shortcomings. Multipath and medium related attenuation cause severe limitations on the range and rate of acoustic communications. High power acoustic signals are harmful to marine creatures. Slow propagation speed is also a limitation of acoustic signals. An electromagnetic technique to replace acoustics would be extremely valuable in that it does not suffer from most of these limitations.