

Exhibit Information

If all the answers to Items 4, 5, 6 are "NO", include as an exhibit a narrative statement describing in detail the following items:

- a. The complete program of research and experimentation proposed including description of equipment and theory of operation.**

The purpose of this work is to conduct research on the detection of buried explosives using NQR spectroscopy. Nuclear Quadrupole Resonance (NQR) spectroscopy uses a pulsed RF transmitter to excite molecules in the IED sample. A high gain/low noise NQR receiver detects the faint NQR signals from IED materials. The NQR receiver is supplied by Tecmag (model Redstone). The transmitters come from Tomco RF. It is a 1000 Watt pulsed amplifier with a maximum 20% duty cycle and 100 millisecond pulse duration. The same antenna is used for transmitting power to the sample under test and detecting the NQR response signal. The antenna is backside shielded with mu-metal and placed less than 2 feet from the sample. It is < 18" and it will be less than one meter off the ground at all times. The transmitter will operate for short periods (100's milliseconds to a few seconds) at a time to collect data. These data will be

processed offline over a few minutes before we repeat.

b. The specific objectives sought to be accomplished.

Detect simulated buried explosives using NQR spectroscopy. Learn about the effects of external manmade RF signal that can interfere with the measurements. Learn about the effects of various soil types and moisture that can hamper detection.

c. How the program of experimentation has a reasonable promise of contribution to the development, extension, expansion or utilization of the radio art, or is along line not already investigated.

The radio is a tool to conduct basic Physics research. Refinements to the receiver, transmitter, and antenna design, all contribute to increased detection sensitivity and advancing the goals of this research program.

Magnetic Field Distribution at Different Distances

