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Aircraft Birdstrike Avoidance Radars | Avian Radar Systems | Aircraft Detection Lighting Systems | Bird Control Radar Systems | Airspace & Marine Security Networks | Drone Detection & C-UAS | Beyond Line-of-Sight Radars

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RE: Exhibit 1 - Application for Experimental Authorization

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

The equipment uses a pulsed doppler radar transmitter and receiver similar to those used in 3D sector panel radars such as the Ground Aware 9120 (QFS001-10044139) and packages the antennas into a 360-degree format. The antennas are electronically scanned to produce a rapidly updated (2Hz), short range, 360-degree, 3-dimensional radar picture. Traditional 360-degree coverage radars have an approximately 0.33Hz update rate). The radar uses digital beam forming to produce 3D data on receive. The doppler spectrum and other parameters measured by the radar can be used to classify them to type (UAS, Bird, Bat, vehicle etc.).

DeTect Inc, along with Dynetics under this experimental program are;

- Modifying the radar waveforms on the 7360L to optimize detection of small birds and bats and/or
- short-range detection of aircraft depending on the waveform selected.
- adding compass and inertial navigation input to allow these radars to be operated on mobile platforms, or floating offshore buoys. The compass/inertial inputs are planned to rapidly adjust the radar offsets to allow it to maintain track on uncooperative targets under conditions that would normally prevent track from being established or maintained, for example as tidal currents cause the floating buoy to move unpredictably.

The experiments aim to provide workable radar solutions for onshore and offshore wind projects as well as Aircraft Detection Lighting Systems. (ADLS) as follows.

1. ADLS there are thousands of towers such as broadcast/cellular/wind turbines across the United States which have high intensity obstruction lights mounted on them to provide warning to aircraft operating in the vicinity. These obstruction lights can be an eyesore for local residents and add to overall light pollution across the country. ADLS systems allow the lights to be turned off unless an aircraft is present in the vicinity thus reducing light pollution. the 7360L is potentially a low cost, low footprint device that could be installed at multiple locations and used to significantly reduce the light pollution caused by these towers.
2. The 3D single platform radar has the potential to provide the position and altitude information required to make informed decisions as to whether mitigation actions are prudent to minimize the risk to birds and bats in both onshore and offshore applications.

The specific objectives sought to be accomplished.

The purpose of our experimentation is to evaluate the ability of this radar to perform these tasks effectively through ground truthing of the functionality in multiple onshore and offshore locations to sample the geographically different bird and bat populations across the United States. The observations made will be used to optimize the waveforms for specific applications and operating environments.

The operation of these radars in various configurations along with differing land and sea clutter conditions and analysis of the waveforms used will allow us to study the feasibility of, and optimize a low-cost single transmitter platform for various applications that will benefit both humans and animals in the future. We have continued opportunities to test this radar in new environments and wish to continue this research.

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 a line not already investigated.
This radar is a state-of-the-art low-cost 3D radar system. The experimentation will allow the envelope of applications to which the hardware can be applied to be expanded through the use of new waveforms and other optimizations of the signal processing. This can only be accomplished by experimental testing with the appropriate targets and environmental conditions.