

ESTD

Engineering Science &  
Technology Division

## National Security

### Human Presence Detection - Enclosed Space Detection System (ESDS)

#### Vehicle Screening at Secure Portals

The Enclosed Space Detection System (ESDS) is a device that can detect the presence of a human being hiding in a vehicle. It is intended for use at any portal where it is desirable to search vehicular traffic to assure that no one enters or leaves a secure area by concealing themselves in a vehicle. The device was developed under the sponsorship of the DOE Office of Safeguards and Security to augment portal security at sensitive DOE sites.

The device works by detecting the motion of the vehicle caused by the shock wave produced by a beating heart. The shock wave couples to the surrounding vehicle, causing it to vibrate on its suspension. The motion sensors used with ESDS are the same type of sensors used to detect the low-frequency seismic movement of the earth. It is the highly-specialized analysis software developed at Oak Ridge that enables the ESDS to detect the minute vibrations that are the tell-tale sign of an intruder hiding in a vehicle.

The ESDS is credited with preventing the escape of a convicted murderer from the West Tennessee State Penitentiary in Henning, Tennessee in September 1999. The automotive industry is actively investigating applying the technology for preventing children from being trapped or inadvertently left in parked vehicles.

#### Base Technology

The ESDS consists of commercially-available sensors, signal conditioning, and portable computer hardware. It is the novel signal processing software developed at Oak Ridge that gives the ESDS its unique functionality. The technology has been licensed by Oak Ridge to Geovox Security, Inc. of Houston, TX. The system is sold commercially as the AVIAN Heartbeat Detector.

#### Specifications and Features

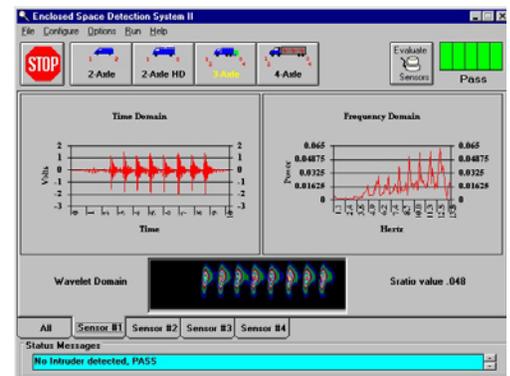
- Can be used as a fixed-location or portable device
- Quick vehicle search time (less than 2 minutes)
- Proven, reliable operation
- Easy to use Windows-based interface

#### *Point of Contact (Technology development):*

Raymond W. Tucker, Jr.  
Image Science & Machine Vision Group  
Engineering Science and Technology Division  
Oak Ridge National Laboratory  
MS-6010  
Oak Ridge, Tennessee 37831-6010  
Office: (865) 576-0947  
E-mail: [tuckerrwj@ornl.gov](mailto:tuckerrwj@ornl.gov)



*The ESDS consists of commercially-available hardware.*



*The ESDS features an easy to use Windows-based operator interface.*

#### *For Commercial Sales information, contact:*

Geovox Security, Inc.  
P. O. Box 540487  
Houston, TX 77254  
Phone: (866) 4-GEOVOX P.O. Box 2008,  
or (713) 521- 9404  
Web: [www.geovox.com](http://www.geovox.com)