

AED-2000 Becomes an Effective Termite Detection Instrument



Dr Alan Lax (Left) and Dr Weste Osbrink of the USDA Southern Regional Research Center in New Orleans, LA, listen to termite activity at the base of a heritage oak tree on the grounds of the SRRRC complex.

The AED-2000 is now the most comprehensive acoustic termite detection tool available in the industry. The new low frequency Model SP-1 probe provides an acoustic range of detection from 1-50 kHz. The probe was developed in conjunction with the USDA-ARS in Gainesville, FL for insect pest detection in potted plants and soils. AEC has demonstrated sensitive detection of termite activity in boards, trees, in soil, and even through wallboard inside homes. This range of versatility has not been available before in an acoustic detection device. The probe design is shown in two versions in the photos below. The longer probe design uses a “waveguide”, which can be inserted in soil, or used to contact the surface of a material to conduct sound to the sensor inside the handle. The design has been optimized to reject sound pickup from the handle area and provide maximum sensitivity through the waveguide. The probe was modified with a shorter magnetic attachment to allow it to be used on lag bolts screwed into trees and the ground during termite detection. The lag bolt acts as

a waveguide, optimizing the transfer of low frequency sounds into the sensor from inside the material into which it is inserted.



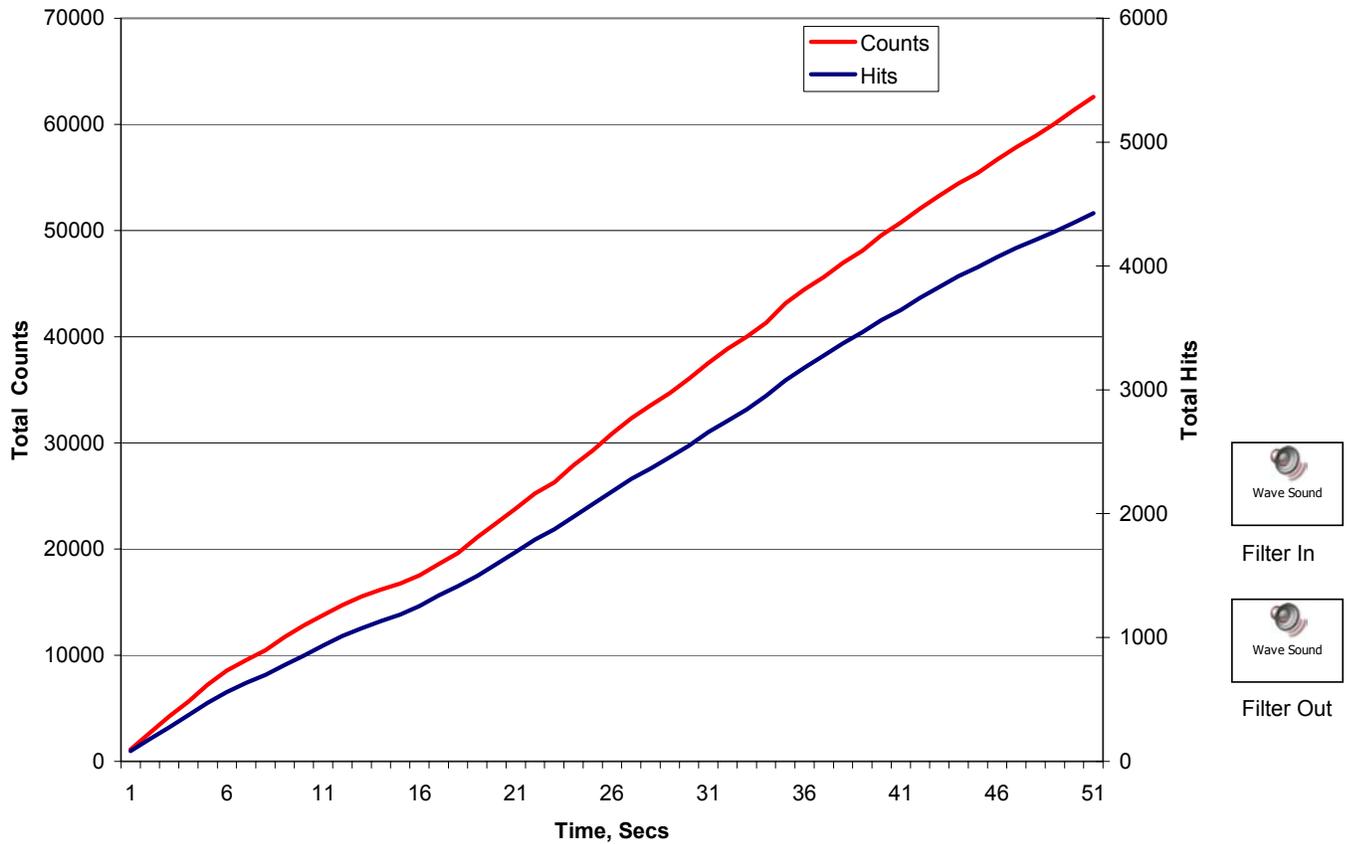
Model SP-1 probe modified for use with a high intensity rare earth magnet to attach to a lag bolt screwed into wooden beam. This probe design can also be used on trees and for soil applications where lag bolts can be conveniently inserted to different depths. The magnet is $\frac{1}{2}$ " diam and has a pull of 15 lbs.

Model SP-1 probe in its standard configuration with an 8-inch long waveguide that can be inserted into soil, such as the potted plant shown above. This probe design can also be used to make point contact with a solid structure.

During experimentation with the AED-2000 and the SP-1 probe designs at USDA-SRRC, effective detection of termite activity was demonstrated in large oak trees, as well as in the soil and root system away from the base of the tree. The following data was stored to memory in the AED-2000 during part of the monitoring activities. A 6-inch lag bolt was screwed into the soil away from the tree, and the magnetic version of the SP-1 probe was attached. The graph shown below was developed from the stored data. This shows that over 4000 hits (events) and 60,000 counts (threshold crossings) were generated in less than a minute of monitoring. Click on the audio buttons to experience what the listener heard through the headphones. In the "filtered" condition,

only the sounds from the sensor >25 kHz are heard. In the “unfiltered” condition, sounds down into the audio range (>1 kHz) can be heard. This monitoring was done next to a roadway, and traffic passing by did not interfere with the monitoring in either the filtered or unfiltered condition.

**Oak Tree #1, 6" Lag Bolt in Ground 4ft SE of Tree Base
AED-2000 w/SP-1 Probe, Filter Out**



A typical termite behavior pattern is exhibited by soldiers when disturbed by intruders that might be a threat to the workers. It is known as “head banging”, and exhibits itself as a repeated mechanical sound quite distinct from the sound of termites chewing on wood. Click on the icon below to hear this sound detected with the SP-1 probe on the windowsill in a bathroom, where a termite infestation had already been identified by a pest control company.

