Final Report–Contract 84SA8016-07. Development of Acoustic Emission Detection Equipment for Wood-Destroying Insects

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The major accomplishments have been the fabrication, testing, modifications, and commercial prototype production of a special proprietary probe by a vendor, Dunegan Engineering Consultants, San Juan Capistrano, CA.

The probe assembly contains the piezoelectric element and a preamplifier, with proprietary circuitry that provides exceptional gain and signal to noise ratio. The “ice-pick” shaped probe inserts into predrilled holes in the wood, and has had several configurations to obtain a good frictional fit in the hole with the minimum of effort to insert.

The results have shown that the precommercial prototype device is capable of detecting termites more than 8 feet from their activity. The frequency range starts near the audible limit and has frequency filtering to maximum the sensitivity.

Some of the features include both audible and LCD outputs of acoustic emission events; settings for time intervals for cumulative events; a rechargeable long-life battery with low battery warning light; and simplified gain settings.

Although not part of this study, the precommercial “Termite Tracker” is being evaluated relative to other commercial devices in a long-term study by Vernard Lewis. Several of the commercial prototypes are on order for evaluation by pest control operators. We expect that enhancements will be made to improve the ruggedness and operation after this evaluation.