ACOUSTIC CRUISE MISSILE DETECTION: SYSTEM CONCEPT

1 km

50 km

HVT

HIGH-VALUE TARGET

“ACOUSTIC FENCE”
“ACOUSTIC SENTRY”
“ACOUSTIC PICKET”
# Acoustic Cruise Missile Detection

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**Title and Subtitle:** Acoustic Cruise Missile Detection

**Performing Organization Name(s) and Address(es):**

The University of Mississippi

**Abstract:**

DARPA, Air-Coupled Acoustic Microsensors Workshop held on August 24 and 25, 1999 in Crystal City, VA., The original document contains color images.

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Prescribed by ANSI Std Z39-18*
TECHNICAL ISSUES

FY99:

• SIGNAL TO NOISE RATIO MUST BE SOLID

FY00:

• AUTOMATED UNALERTED DETECTION MUST BE RELIABLE
ON-GOING ACOUSTIC ANALYSIS

- RAW RECEIVED SIGNAL LEVEL (RL)
- TRANSMISSION LOSS (TL)
- SOURCE LEVEL (SL)
  \[ RL = SL - TL \quad SL = RL + TL \]
- RAW NOISE LEVEL
- SIGNAL TO NOISE RATIO (SNR)
DAY/NIGHT PROPAGATION

**DAY**
- **UPWARD REFRACTION**
  - $C_{eff}$
  - Shadow Zone
  - 1 km

**NIGHT**
- **DOWNWARD REFRACTION NEAR SURFACE**
  - $C_{eff}$
  - DUCTED PROPAGATION
  - 4-8 km

"Sky Wave" SCAT By TURB