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### **Detection and classification using the Estimated Ocean Detector**

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We have developed the Estimated Ocean Detector, a likelihood ratio receiver with an estimator-correlator structure, and applied it to detection and classification of underwater acoustic signals. The receiver requires that the noise probability density function (pdf) to belong to the exponential class but need not be Gaussian. A composite hypothesis is employed in order to incorporate knowledge (or predictions) of the signal parameter statistics. Previously, receiver performance was demonstrated for Gaussian noise and sinusoidal signals with known frequency and phase and whose amplitude pdfs were predicted using knowledge of the ocean environment and an acoustic propagation program. In order for the receiver to be useful operationally, it must be able to accommodate unknown signal phase and incorporate numerical estimates of noise and signal parameter pdfs. Progress toward satisfying these requirements is reported in this talk. Work supported by the Office of Naval Research Undersea Signal Processing.