

## Onshore Single-Sensor Technology: Theory and Field Examples

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Signal is our prize; but, unfortunately, much of the attention in seismic programs must be directed toward noise. In traditional approaches, array theory is heavily relied upon for noise suppression. Large source and receiver patterns might be effective in this regard, but they lead to smearing of signal, loss of amplitude fidelity, and loss of resolution.

A step in the right direction can be to reduce the sizes of the arrays. This alleviates some of the effects of intra-array statics, but it usually still relies upon the stack-array process (completed by CMP stacking) to suppress the noise. The most effective way to address coherent noise while preserving signal integrity is to go with massive sampling of both the seismic and survey data. This is best provided by single-source and single-sensor technology.

In this approach, the noise field is sampled finely enough to avoid aliasing. This permits removal of the noise in a signalfriendly manner by the adaptive velocity filters that comprise the Digital Group Forming process. Performing the noise removal pre-stack renders the records suitable for use in AVO, AVA, and Full Waveform Pre-Stack Inversion analyses. 2-D and 3-D field examples will be presented in the talk.