BroadSeis is a combination of three distinct parts:
- Deep-towed low-noise Sentinel® solid streamers
- Variable depth streamers with proprietary* depth profiles
- Proprietary*, fully 3D, true amplitude deghosting and high-end imaging

BroadSeis acquires both low and high frequencies using a single spread of Sentinel cables towed with a variable depth configuration. The resulting receiver ghost notch diversity along the cable is exploited by our proprietary new deghosting and imaging algorithms to produce an ideal wavelet, with the best signal-to-noise ratio and simultaneously the best low- and high-frequency content. This unique combination provides the clearest images, especially at depth, around key target locations.

FEATURES
- Widest bandwidth in the industry: 2.5 – 155Hz recently achieved in the Gulf of Mexico
- Highest signal to-noise-ratio available
- Deep penetration and high resolution
- Fully 3D and WAZ-compatible – no approximation
- True amplitude image of the subsurface (fully amplitude preserving 3D deghosting)
- An operationally robust solution using proven equipment
- Immediate availability
- Raw field data supplied
*(patents pending)

BENEFITS
- Over five octaves of usable data recorded
- Exceptionally sharp and clean wavelet providing the clearest images and details at the reservoir
- High-resolution shallow images for site surveys and drilling risk assessment
- Improved low frequencies for enhanced imaging below difficult geology (e.g. subsalt and sub-basalt) and for greater stability in seismic inversion
- Notch diversity can be tuned to maximize bandwidth at target depths and reservoir levels

BroadSeis result: bandwidth 2.5 – 110Hz.
BENEFITS OF BROADBAND RECORDING

The importance of recording the full range of frequencies (low as well as high) is widely accepted for high-resolution imaging. Broader bandwidths produce sharper wavelets. Therefore both low and high frequencies are required for high-resolution imaging of important features such as thin beds, small sedimentary traps and shallow drilling hazards. In addition, high-fidelity, low-frequency data provides deeper penetration for the clear imaging of deep targets, as well as providing greater stability in seismic inversion.

THE STREAMER GHOST NOTCH CHALLENGE

Towing the streamers deep reduces sea-state noise and improves low-frequency acquisition. However, the streamer ghost, the reflection of data back down to the streamer from the sea surface, causes a notch in the amplitude spectrum which comes in at lower frequencies as the cable gets deeper – 100Hz at 7.5m streamer depth and 50Hz at 15m. In the past, this has led to a choice between recording shallow for high frequencies or deep for noise-free low frequencies.

THE BROADSEIS SOLUTION

Using a variable depth streamer introduces diversity in the streamer ghost notch. This allows our proprietary deghosting and imaging algorithms to extract the full range of frequencies and provide exceptionally sharp and clean wavelets for interpretation. The notch diversity is designed and optimized for exploration and production targets, delivering the best possible resolution to interpreters. The variability of the cable depth can be tuned for different water depths, target depths and desired output spectra.

PROVEN, AVAILABLE EQUIPMENT

BroadSeis uses fully-proven, readily-available equipment and is immediately operational. The combination of Sercel Sentinel streamers and Nautilus® controllers is ideal for variable depth acquisition and allows for efficient operations. Control of solid streamers in variable depth mode is very robust and stable, especially using Nautilus, even at 60m. Sentinel solid streamers can be towed deeper than other streamers providing improved low frequencies. The streamers retain their exceptional low-noise characteristics at all depths.

The combination of Sentinel streamers, new variable-depth towing geometries and breakthrough processing technology creates stunning final images of the subsurface. BroadSeis provides a simple, available and robust solution for broadband marine acquisition in all dimensions.