

The **OBEi1** Deep Marine



The OBEi1 Deep Marine is a state-of-the-art ocean-bottom electrical imager. A remotely operated underwater vehicle (ROV) carries the OBEi1 and is pulled behind a boat with a cable system at roughly one kilometer in depth. The cable—which typically spans approximately 1 kilometer behind the ROV—uses a Kevlar-strength member, water-block inner seal, and rugged marine jacket. The OBEi1 sensor has 56 AGI graphite electrodes (US patent 6,674,286) available in custom spacings.

USE CASES

The OBEi1 has been designed specifically for oceanic applications, including geohazard research, sediment research, fracture imaging, and mineral, oil and gas exploration. Here are a couple of additional applications where the OBEi1 excels:

+ Subsurface Geotechnical Site Investigation For Oil Platforms

Oil rigs are anchored for safety into the sub-bottom which is often composed of soft sediments like silt and clay. Methane gas from deep beneath the rig may build up near the anchor points causing them to become structurally unsound, creating a potentially disastrous situation. With the OBEi1 Deep Marine, oil companies can mitigate this issue before it happens and ensure that their platforms are well-anchored into the sea floor.


+ Gas Hydrate Exploration

Methane coexists with oil reservoirs in the ocean below the sea surface. When this methane pushes its way through the salt dome, the oil and gas travels up to form a gas hydrate deposit inside and below the mudline of the sea floor. These reservoirs leak constantly, and as the methane bubbles up toward the surface, it freezes below and inside the mudline, forming an ice known as gas hydrate. If the temperature line where gas hydrate forms varies even a degree, enormous volumes of methane can be released around the world. This would cause potentially harmful climate change. Scientists can map and monitor pockets of gas and methane using the OBEi1 Deep Marine.

STANDS UP TO THE PRESSURE

Despite extreme pressure and salt water, the system is able to operate for extended periods of time, while imaging 150-200 meters below the mudline, without electrode fouling or downtime. Compared to high-powered TDEM and other electrical methods, the OBEi1 design is affordable to deploy.

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THE OBEi1 DEEP MARINE FEATURES TWO MODES OF OPERATION:

+ 2D & 3D Stationary: Supports high-resolution stationary 2D and 3D ocean-bottom electrical imaging.

- Operate down to one kilometer in depth (rated to 1.5 kilometers).

- Sub-bottom imaging supports the Dipole-Dipole, Gradient, and StrongGradient™ arrays.

- Typical depth penetration is 10-20% (for the Dipole-Dipole array) of electrode sensor spread length but will vary depending on the array used.

+ 2D Trawling: Supports continuous 2D electrical imaging.

- Operate down to one kilometer in depth (rated to 1.5 kilometers).

- Sub-bottom imaging supports the Dipole-Dipole, Gradient, and StrongGradient™ arrays.

- Typical depth penetration is 10-20% (for the Dipole-Dipole array) of electrode sensor spread length but will vary depending on the array used.