SILICON AUDIO SEISMIC

ENGINEERED FOR EXTREMES

Boreholes: Extreme Endurance

GEOTHERMAL MONITORING: FOUR YEARS, ZERO FAILURES

Silicon Audio sensors grouted into a borehole in the Cascadia subduction zone have operated without incident since deployment, monitoring geothermal activity.

Permanent downhole installation for comprehensive monitoring

Our vertical sensor array demonstrated efficacy comparable to colocated geophones and nearby broadband sensors, providing continuous data for geothermal research and enhanced geothermal system (EGS) development.

Performance: High sensitivity, low noise

Bandwidth: 0.025 Hz to 1.5 kHz

Deployment: Kevlar lift cables / permanent grouted installation

Collaboration: Lawrence Berkeley National Laboratory, U.S. Department of Energy

Proven reliability at scale.

Four years of continuous operation in demanding downhole environments, withstanding geothermal heat, pressure, and permanent waterlogged conditions. Zero maintenance required. This long-term performance record demonstrates the robustness of Silicon Audio's optical seismometer technology for critical monitoring in extreme.

Scaling for the energy transition.

Nine additional sensors were shipped to Lawrence Berkeley National Labs and deployed at the Newberry Enhanced Geothermal System Oregon. This deployment is yet another example of a trusted partnership with the U.S. government, and for the next generation of geothermal energy development.

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We Engineer Instruments That Redefine What's Possible

For decades, seismic sensing has required compromise. Low-noise, high dynamic range seismometers deliver exceptional data but are fragile, expensive, and/or difficult to deploy. Industrial geophones are rugged and affordable, but lack the low power consumption, sensitivity and bandwidth necessary for breakthrough science. And nothing survives true extremes, not polar ice sheets, not geothermal boreholes, not spaceflight.

The question we asked: *What if a single sensor could do it all?*

Our Answer: Optical Interferometry Meets Field-Proven Engineering.

Silicon Audio took the reliable mechanics of the traditional geophone and reimagined it with optical sensing technology. The result is a paradigm shift: one compact, ruggedized sensor that delivers scientific-grade performance across bandwidth, sensitivity, and dynamic range previously impossible in a deployable package.

Sample Current Customers

- NASA Artemis III Lunar Mission (currently scheduled for 2027 launch)
- DOE Enhanced Geothermal Systems (expanding)
- Los Alamos National Laboratory / Nevada Test Site Long-term Monitoring
- Texas Seismological Network
- Subsea Data Systems SMART Cable Sensor Systems

From Energy Transition to Planetary Exploration

Our technology is proven where it matters most:

Earth's Interior: Four years of continuous geothermal monitoring at DOE/Lawrence Berkeley sites with zero maintenance, now scaling to Enhanced Geothermal Systems and next-generation energy infrastructure.

Earth's Extremes: Supporting Subsea Data Systems and Ocean Networks Canada, a SMART Cable sensor system deployed in the Cascadia Subduction Zone off the coast of British Columbia.

Beyond Earth: Selected as the supplier of multiple seismometers for NASA Artemis III, returning seismic science to the Moon after 50 years and laying groundwork for Mars exploration.

We don't just build better sensors. We remove the constraints that have limited seismic science for decades.

Terrestrial Tech Specs at a Glance

Bandwidth: 0.025 Hz to 1.5 kHz (single sensor)

Noise Floor: <1 ng/√Hz, detecting femtometer-scale motion

Tilt Tolerance: +/-15° (lowest noise floor); Up to +/-180° omni-directional

Shock Rating: 1500G

Form factors: Full range include vault, posthole, and shallow borehole packages

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