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## Buried Conductor Detection in The Seabed

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Unlike pure water, electrical breakdown in seawater has not been studied broadly, in seawater the ions are provided by the salt content leading to a conductivity of about 53mS/cm in contrast, purified water has a theoretical conductivity of 55nS/cm, when short pulses are applied the contribution of the ions to current conduction is weakened due to the low drift velocity of the ions and consequently it can exhibit an insulator like behavior. Based on this hypothesis and on previous research done by Jon C. Pouncey on detection of buried conductors in the soil, UNM is testing the properties of seawater breakdown to identify opportunities to develop an effective method to detect conductors buried in the seabed. Tests have been performed with a variety of Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> aqueous solutions applying ~6ns pulses in a custom designed chamber, breakdown events are observed at low concentrations and high voltage, FWHM, rise time, and inter-electrode distance are also correlated, different electrode geometries are also used. Analysis of the obtained results shows that breakdown in seawater is achievable and future experiments with longer pulses and more energy are contemplated.

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