
Minimizing Offshore Exploration Risks by Evaluating the Charge of Subsea Structures

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ABSTRACT

Offshore exploration is a costly endeavor that entails multi-millions of dollars spent on the acquisition of seismic data, satellite data, and a variety of other data gathering endeavors to evaluate subsurface structures and systems. All of these technologies lend an understanding to the geologic structure of subsea systems, but do not address the critical question; are these structures charged?

Previous methods have attempted to address this key issue by monitoring macroseepage using geochemical techniques to assess the detection of oil seepage and link surface slicks to subsurface hydrocarbon systems. The success of these traditional techniques has been limited primarily due to two factors: (1) insufficient sensitivity and (2) dependence on macroseepage mechanisms.

Recent advances have resulted in a new technology that relies on passive monitoring systems and microseepage mechanisms. The result is a technology with an order of magnitude increase in sensitivity. The resulting increase in sensitivity now makes it possible to:

- Identify charged and uncharged areas in a field,
- Identify hydrocarbon types (gas, condensate, or oil),
- Identify areas for further seismic acquisition,
- Rank prospects, and
- Confirm areas for relinquishment.

Thus, passive sampling survey data can be combined with other structural and geologic data to more accurately define an offshore petroleum system, save clients millions of dollars in dry wells or misdirected seismic programs, and enhance exploration success.