The link between hydrocarbon seeps and commercial reserves is well established. Marine seep hunting is at the forefront of hydrocarbon exploration due to recent advances in offshore geophysical and geochemical technologies. Fugro’s team of geoscientists deliver an advanced client-focused seep hunting service for the offshore industry creating a competitive advantage for our clients.

**CLIENT FOCUSED**

We design an integrated geochemical program for our clients that optimises each step of the seep hunting process – from individual studies to cohesive regional investigations. This creates a programme consisting of a legacy data study, geophysical acquisition survey, targeted coring and geochemical sampling and heat flow measurement program. Case studies demonstrate how our approach – compared to historic industry success rates – can more than double the likelihood of recovering samples bearing evidence of migrated liquid petroleum and thermogenic gas (Bernard et al., 2008; Orange et al., 2008; Gharib, 2009). Our Center of Excellence for Seep Studies boasts world-renowned geoscientists who ensure data quality and consistency for every project. Constantly innovating, they refine processes and techniques, improving deliverables for our clients.

**SEEP HUNTING BENEFITS**

Identifying and sampling sites where deep fluids have migrated to the seabed provides the highest quality geochemical data for understanding the deep reservoir. Seep hunting programs directly lower your exploration risks and costs by:

- improving understanding of prospects
- providing type and maturity data for actively migrating hydrocarbon reserves
- guiding basin evolution models with robust heat flow and geochemical data
- focusing additional exploration strategies and expenditures on high-graded areas
SCIENTIFIC INNOVATION

Seep hunting projects are different from traditional hydrographic and coring surveys. Nuances in survey parameters can dramatically impact the detectability of hydrocarbon seeps and related seafloor features. Our geoscientists understand these nuances and bring industry-leading best practices – learned from many years of successful geochemical sampling and analytical experience – to every step of your geochemical program.

Preparation for your project begins with a thorough assessment of legacy seismic and other available geological data. Our onboard geoscientists come prepared to incorporate these reference data with all newly acquired shipboard data. We deliver real-time interpretations of the geological systems using bathymetric, backscatter intensity, and water column data – as well as any other ancillary geophysical data – for indications of hydrocarbon seeps and seep-related features. At the end of the geophysical data acquisition, our seep hunting team delivers a set of ranked, high-value targets for the subsequent geochemical coring and heat flow program.

Seabed seep features are transient, small, discrete, and hard to sample; therefore, during the geochemical and heat flow program, our geoscientists continue to fine-tune targets using sub-bottom profile data. Targets are then precisely sampled using ultrashort baseline (USBL) assisted navigation technology.

Skilled, onboard geoscientists select key portions of the core for further laboratory geochemical analysis. Shipboard geochemical screening analyses (gas chromatography and total scanning fluorescence) are conducted to help optimise the sampling program in near-real time. Samples identified onboard as having potential thermogenic signatures are preserved for advanced, shore-based geochemical analysis.

Heat flow measurements are taken by probe using the same precision-guided navigation system as used for the core sampling. After data acquisition and quality control, data are then passed through an iterative processing procedure using a combination of statistical analysis and scientific evaluation with respect to the regional hydrogeological context and any other measurements obtained.

THE FUGRO DIFFERENCE

We know our technological expertise only benefits our clients when we use it to deliver against their business needs. Our Seep Hunting team provides detailed, actionable results in near real time to our clients, meaning the work can be optimised throughout the project life cycle. We work in collaboration with you to meet your timeline and goals by providing pre-planning, daily shipboard technical reporting, integrated geophysical and geochemical deliverables, and value-added data products useful for later project work (e.g., geohazards analysis) that exceed your expectations.

When you choose Fugro to provide your seep hunting services, you are engaging a global leader with a world-class safety culture and expertise in all phases of geochemical seep hunting. We provide the world’s foremost one-stop shop for reducing exploration uncertainties through analysis and interpretation of hydrocarbon potential in frontier regions. Our ongoing innovation and research in all aspects of subsea exploration ensure our service maintains its industry-leading status. High-grade your exploration program by contacting Fugro’s Global Center of Excellence for Seep Studies today.

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