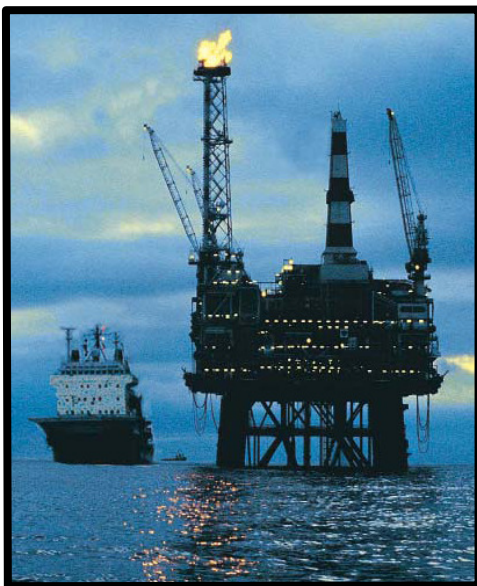


RISK REDUCTION THROUGH DIRECT HYDROCARBON DETECTION

RECENT TRANSITION ZONE SURVEY has been conducted around the Kingdom of Bahrain where 1200 GORE™ Modules were installed by divers in water depths up to 20m.

Offshore G&G Exploration

Offshore exploration drilling is extremely expensive! It consumes major resources for long periods of time. From the geophysical evaluation to environmental assessments conducted before the technical team even begins to think about the well; money, time and manpower is consumed.



Think of a WORLD where the technical team could reduce offshore dry holes and potentially recognize non-commercial discoveries! *Think of a WORLD*

Reduce Cost – Reduce Risk

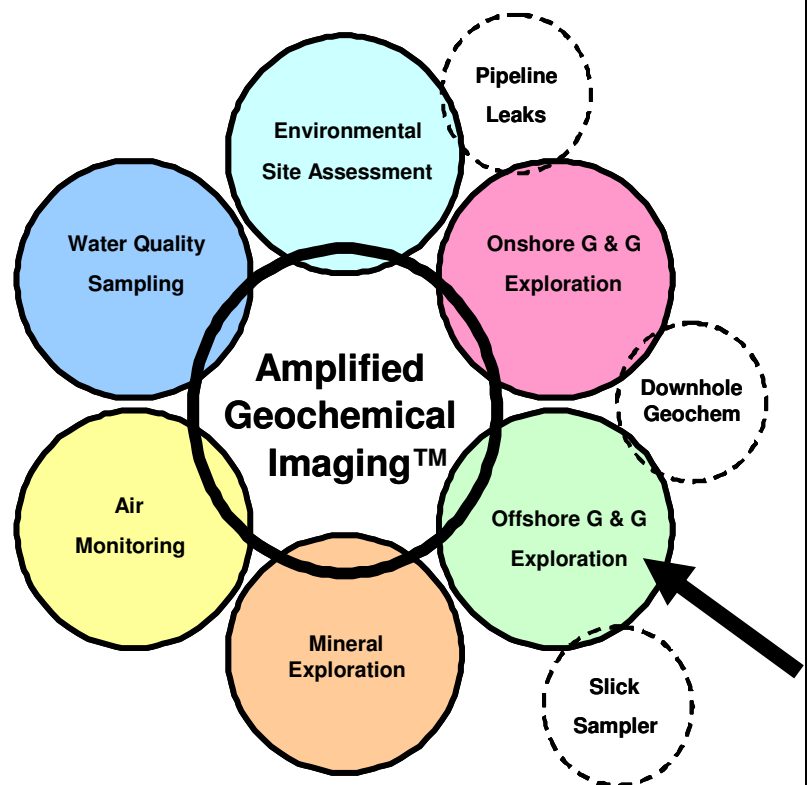
Considering the huge costs involved in offshore exploration, reducing risk is essential. The GORE™ Survey delivers direct hydrocarbon indication of a prospect's charge –giving you the information you need to focus exploration efforts, thereby reducing cost, reducing risk . . . and increasing success.

where the technical team could anticipate the hydrocarbon phase before the offshore well is drilled! *Think of a WORLD* where the technical team could estimate the aerial size of an offshore discovery before the drilling of delineation wells!

For high risk exploration wells, a five percent positive shift in the chance of success creates a significant increase in the project's risked net present value.

The last frontier for reducing risk is *DHI* (*Direct Hydrocarbon Indicators*). GORE Amplified Geochemical Imaging™ is a world leader in this area.

The Amplified Geochemical Imaging™ Circle of Technology



3Ds of Surface Geochemistry

Utilizing proven surface geochemical science, the GORE™ Survey is the only technology that can detect, differentiate and delineate hydrocarbons across a broad spectrum of compounds.

Detection

- Measures actively migrating hydrocarbons directly
- Identifies compounds at lower collection levels

Differentiation

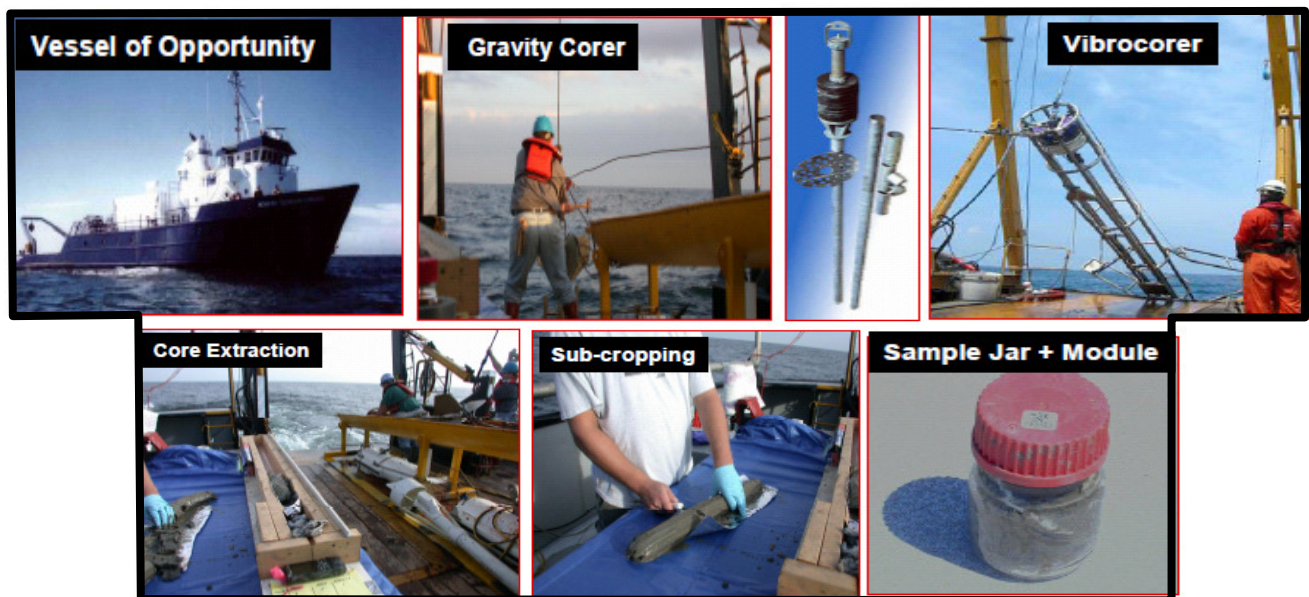
- Distinguish over 90 compounds, C₂ > C₂₀
- Defines petroleum phase – gas, condensate, oil

Delineation

- Outlines the type and source of emanation
- Draws margins around pools, reservoirs, fields, etc.

Simplified Field Operations

Unlike other offshore geochemical studies, the GORE™ Survey requires no onboard laboratory or special collection apparatus. We make it easy. Sample collection can run parallel with your other data acquisition programs, or Gore can provide turnkey service in cooperation with internationally experienced offshore contractors. It works like this. seabed samples are collected in a loose grid pattern at pre-determined locations, using standard coring tools. Cores are sub-sampled onboard and placed into sample containers along with GORE™ Modules. Samples are then returned to Gore for analysis.



Proven Analysis & Interpretation

Back at the lab is where Gore's nearly 15 years' experience kicks in. State of the art TD/GC/MS analysis operating under strict ISO standards provides a rich mass data set (90+ compounds) and stable carbon isotope data (optional). Our scientists then use proven statistical processing techniques, employing years of experience in pattern recognition and analog modeling, to compare geochemical features to known geologic trends & structures.

Targeting Offshore Macroseeps

Sampling and analysis of ocean floor features such as pockmarks, scarps, and mud volcanoes as well as macroseepage locations is a common practice in offshore exploration. Geochemical data from sediment samples, taken with marine drop cores, can verify the presence of thermogenic petroleum system in an area as well as characterize petroleum phases in a relative manor. Conventional core analysis typically includes:

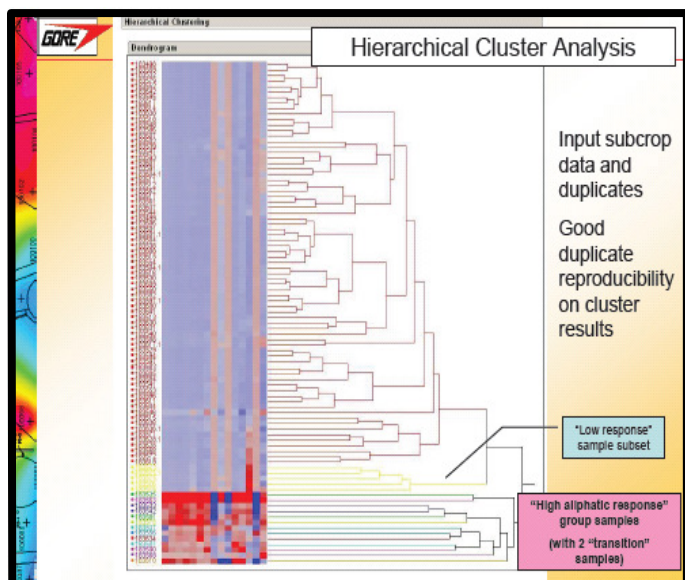
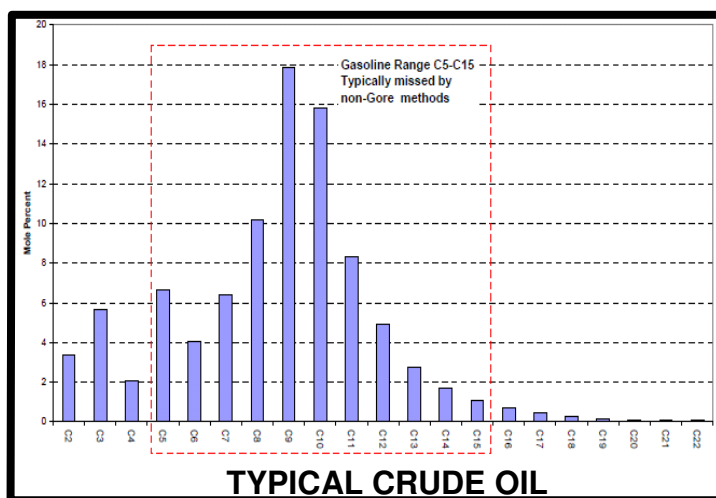
1. The measurement of interstitial gas from C₁-C₅+ using a headspace analysis,

2. Analysis of $>C_{15}$ compounds by solvent extraction, and
3. Semi-quantitative Total Scanning Fluorescence (TSF) for aromatic nature.

Unfortunately, the gasoline range of C_5 to C_{15} is missed with this standard geochemical analysis. This is a critical piece of data for characterization of typical oils as shown in the composition chart below.

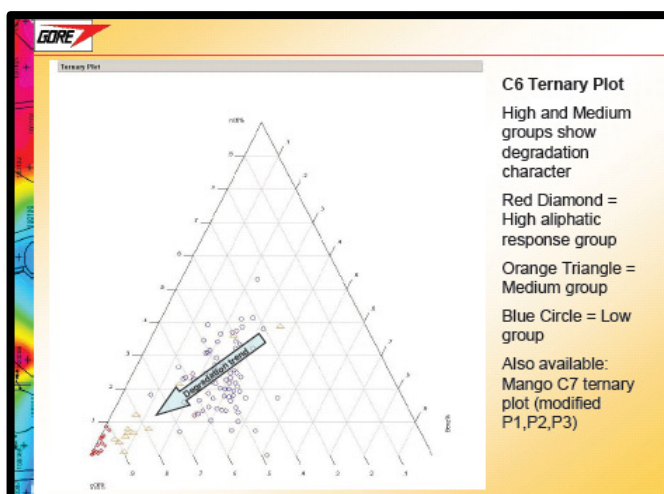
With the addition of GORE's service you enhance your data set by:

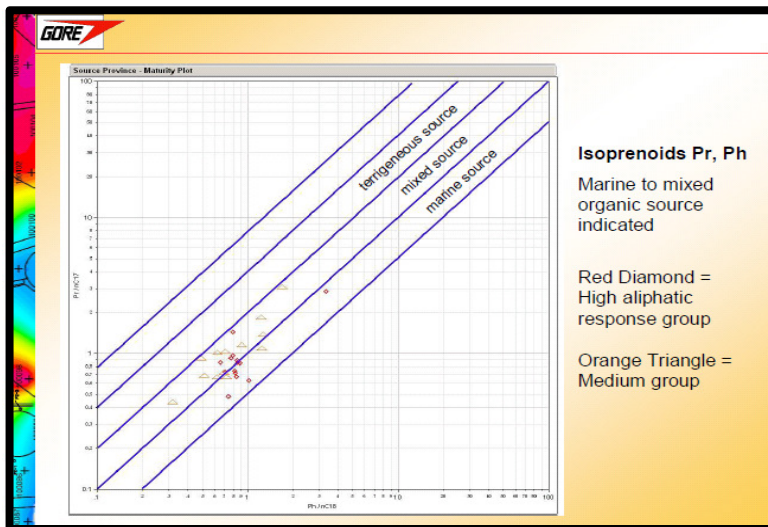
1. Addition of the gasoline range compounds between C_5 and C_{15} , which are usually unobtainable yet often critical.
2. Reducing the potential of missing a key sediment or seepage feature by using a method that achieves several orders of magnitude higher sensitivity.
3. Assessing potential for petroleum charge in the absence of identified macroseeps.



With adequate sample resolution in a program, Gore can characterize relative petroleum phase types such as gas, condensate and oil.

Additional interpretation tools include C_2 - C_5 alkene/alkane ratios to detect enhanced seepage areas and C_6 or C_7 (Mango) ternary plots to identify petroleum degradation and characterize source.





Plots of Ph/nC_{18} vs Pr/nC_{17} can be used to estimate the type of source rock in your area and its maturity.

NEXT MONTH:

I will review a survey that was conduct across a marine transition zone with water depth of 2 to 7m in Lovns Bredning, Demark.

For further information regarding **Amplified Geochemical Imaging Technology**, contact Bob Potter, Geochemtech Inc. at (403) 863 9738 or ropotter@geochemtech.com

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