

High-Precision Isotopic Analysis of DST and Production Gases

Isotech is the only commercial laboratory in North America capable of very high precision analyses of both carbon and hydrogen isotopes in C₁ to C₅ hydrocarbons using the traditional methods of off-line preparation followed by dual-inlet isotope ratio mass spectrometry. Although the more recently developed continuous flow methods (CF-IRMS) of isotopic analysis are cheaper and faster, they lack the precision needed for applications such as compartmentalization studies and production allocation. By doing carbon and hydrogen isotope analyses on each of the C₁ to C₅ hydrocarbons, a total of 14 different isotopic parameters can be measured on one gas. These data, coupled with reliable compositional analyses provide very specific fingerprints for differentiating closely related gases.

High-precision isotopic analysis of hydrocarbons has application to many areas, including:

- Reservoir continuity evaluation
- Reservoir seal definition
- Prediction of drainage compartments in advance of pressure differences
- Production allocation for wells completed in multiple zones
- Monitoring production performance of individual units
- Production monitoring for fault failures and casing defects
- Prediction of down-dip oil from gas cap composition using local calibration data
- Improved understanding of reservoir architecture
- Determine impact of frac jobs
- Identifying the influx of storage gas or reinjected gas
- Monitoring well integrity

Isotech is uniquely qualified to provide the analytical data for the engineering applications of geochemistry. Although we do not do interpretive work, we maintain a network of geochemists whom we can recommend for your particular problem.

