ProTechnics | **Reservoir Diagnostics**

SPECTRA™ FLOOD

SPECTRA**FLOOD**™ is an interwell tracer diagnostic service that is composed of a versatile array of chemical compounds designed to track the flow of injected fluids within the reservoir.

Commonly known as a tracer survey, SPECTRA**FLOOD**™ tracers are injected into target injection well(s) and allowed to follow the path of injected fluid as the fluid sweeps the reservoir. Specific quantitative information about the reservoir is revealed, such as:

- **Direct Communication Between Injector and Producer**
- **Exact Breakthrough Times Between Injector and Producer**
- **Identification of Natural Fractures, Thief Zones and Faults**
- **Extent of Formation Layering**
- **Swept Pore Volume and Sweep Efficiency**
- **Conformance Gel Treatment Volume Estimation**

SPECTRA**FLOOD**™ tracers identify matrix bypass events (MBE), such as thief zones, natural fractures, and high permeability conduits within the reservoir. These “short circuits” cause the flooding process to become ineffective and limit the recovery of hydrocarbons within the reservoir.

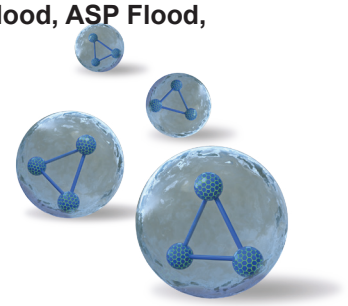
ProTechnics’ suite of non-radioactive, chemical tracers have been field tested for use in all types of injection projects.

ProTechnics’ ultra-low detection limits result in significantly increased resolution of data, while also decreasing the amount of chemical tracer required for a tracer injection. This drastically improves project economics for a typical tracer program and allows the client to broaden the scope of the project.

In the past decade, extensive efforts in tracer R&D have led to a suite of non-radioactive, environmentally friendly tracers that are extremely reliable in the harshest of reservoir conditions. These tracers are detectable many years after injection into the reservoir, and are detectable at extremely low concentrations (parts per trillion).

Water Based Tracers

- **Used for Waterflood, Polymer Flood, ASP Flood, Microbial etc.**
- **Tracers are Water Soluble**
- **Chemically Inert, Conservative Tracers**
- **Do Not Degrade Over Time**



Gas Based Tracers

- **Used for CO2 Flood, N2 Flood, Miscible Gas Flood, etc...**
- **Tracers are Gas Soluble**
- **Chemically Inert, Conservative Tracers**
- **Do Not Degrade Over Time**

Steam Tracers

- **Used for Steam Drive, CSS, SAGD**
- **Tracers Will Travel with the Injected Steam and Partition into the Soaked Oil**

For more information about SPECTRA**FLOOD**™ go to www.corelab.com/protechnics.

Core Lab

Interwell Tracer Study

Adding chemical tracer to an injection well is the only way to differentiate between injection water and formation water, and between other injectors in the field. By tagging each injector's water with a unique tracer fingerprint, we are able to quantify an injector's support of an offset producer.

ProTechnics