Tenzor GEO

FULL WAVE LOCATION

Mitigate risk. Remove uncertainty.
Operate Sustainably

FULL WAVE LOCATION

TenzorGEO's passive microseismic full wave location technology is applicable across a range of geoscience sectors. This sought-after and transferable insight into the subsurface will allow flexibility in your subsurface operations, efficiency and achievement of production targets in hydrocarbon, CO2, geothermal, industrial waste or applied research geoscience.

Why choose this service?

Monitoring and subsurface characterisation is key to predicting problems before they happen. The application of FWL for monitoring and mapping of microseismic activities and fluid movement reduces uncertainty of storage integrity, drilling and reservoir risk. With FWL monitoring of the subsurface and fluid injection activities, operators can detect and assess potential problems, including fracture height growth potentially leading to containment loss and/or damage to reservoir permeability.

The enabling technology

FWL, or Full Wave Location, is a geophysical method applied to microseismic data to accurately detect fluid movement and other causes of microseismic activity in the subsurface. It is a passive microseismic monitoring technology that aims to locate microseismic events and identify their type of deformation by using the full-waveform signal data registered on three components at the lowest signal to noise ratio. This technique has proven a valuable method for facilitating better reservoir management, improving hydrocarbon recovery, monitoring fluid injection operations and identification of potential areas of concern during said operations.

APPLICATIONS

Safety and Communication:

1. Communicate to stakeholders the location of an event, determine its coordinates, type and azimuth of the crack that has formed it;
2. Cease operations when the event is outside expected parameters (e.g. CO2 injection monitoring).

Natural active network mapping:

1. Identification and mapping of the geometry and position of pre-existing active faults and fractures. Suitable for the assessment of the viability of hydraulic fracturing operations or CO2 storage sites;
2. Assessment and analyses of natural fracturing processes in the target horizon and changes in their direction (horizontally and vertically), determination of the prevailing azimuth of fracturing;
3. Determination of optimal well orientation in fractured and fractured-porous reservoirs in order to reduce the risks of drilling dry wells;
4. Selection of the optimal direction for horizontal boreholes;
5. Forecast of fracture development before wellbore stimulation;
6. Optimizing field management (waterflooding, perforation washing, steam injection, etc.);
7. Stress orientation inversion.

Monitoring of fluid injection into the reservoir:

1. Evaluation of the fluid movement directions along the lateral and delineation of filtration channels in the target horizon, as well as forecasting of injected fluid leakage beyond the boundary of the reservoir / gas storage area / injection site;
2. Determination of vertical fluid flows in multilayer fields;
3. Assessment of drainage zones of producing wells;
4. Control over the process of fluid injection for the safe operation of fluid injection / CO2 sequestration and gas storage sites;
5. Control over induced fracture processes during injection into the formation;
6. 3D microseismic image of the fluid front movement in the reservoir and preferred flow path and flow anisotropy within hydrocarbon and/or CO2 storage sites.

MARINE LOGISTICS

Operations in the UK and overseas are performed using non-specialist vessels which have crane and deck space. Equipment is loaded onto the vessel in sea baskets and deployed to the seafloor using the crane facilities. No specialist equipment is required, equipment is mobilised, deployed to the seafloor and observed using remotely operated vehicles (ROVs).

TENZORGEO
13 Queen's Road
Aberdeen
AB15 4YL
UNITED KINGDOM

+44 (0)1730 622044

ABERDEEN | PERTH

www.tenzorgeo.co.uk

MOLYNEUX ADVISORS
The Park Business Centre
45 Ventnor Avenue
West Perth
WA 6005
AUSTRALIA

+61 (0) 418 349 672