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Programs Address Unconventional Uncertainty

Seismic attributes used to provide predictive expression of reservoir properties.

Contributed by ION

ION's ResSCAN 3-D programs encompass multiple industry disciplines to address two key uncertainties in unconventional reservoirs today – characterizing reservoir quality and well completion effectiveness for optimal production. The programs are developed and managed by the company's GeoVentures group and are imaged by the company's GX Technology (GXT) group using advanced data processing techniques.

ResSCAN programs are custom-designed in collaboration with ION's geo-consulting team, outside specialists, and directly with E&P companies. Relying on up-front geological, petrophysical, and rock physics analysis, ResSCAN programs establish what seismic attributes, from 3-D single or multicomponent seismic data, provide the most predictive expression of key

reservoir properties for a given shale play and, most importantly, impact an operator's drilling and well completion engineering decisions and parameters.

ResSCAN workflow builds on experience gained across all major North American plays and emerging European plays. Since 2003, ION has been involved in more than 250 shale play projects, delivering approximately 54,340 sq km (21,000 sq miles) of data. Five 3-D programs encompassing more than 2,330 sq km (900 sq miles) are currently in various stages of the ResSCAN workflow. These include ClearfieldSCAN, LakeviewSCAN, AlleghenySCAN, and GroundhogSCAN in the Marcellus play and BearCreekSCAN in the Niobrara play. All of these programs incorporate multicomponent acquisition, employ GXT's data processing technologies and techniques, and rely on quantitative interpretation to derive highly optimized seismic attributes. These customized attributes are

obtained from careful data processing followed typically by seismic inversion and shear-wave splitting analysis. With this approach, a higher resolution estimate of formation density and natural fracture intensity can be determined, which generally cannot be accurately estimated with P-wave (single-component) data alone.

Ken Williamson, senior vice president of ION's GeoVentures Group, said, "Typical single-component spec surveys deliver processed P-wave volumes with the expectation that E&P companies will subsequently extract any potential value. ION's ResSCAN workflow is defined to provide operators with value-add deliverables in the form of 'business data volumes,' not 'science data volumes,' to help them better define the critical engineering parameters to maximize the number of high productivity wells."

To learn more, visit ION at SEG booth 1844. ■