

ClearfieldSCAN | Marcellus

PROGRAM OVERVIEW

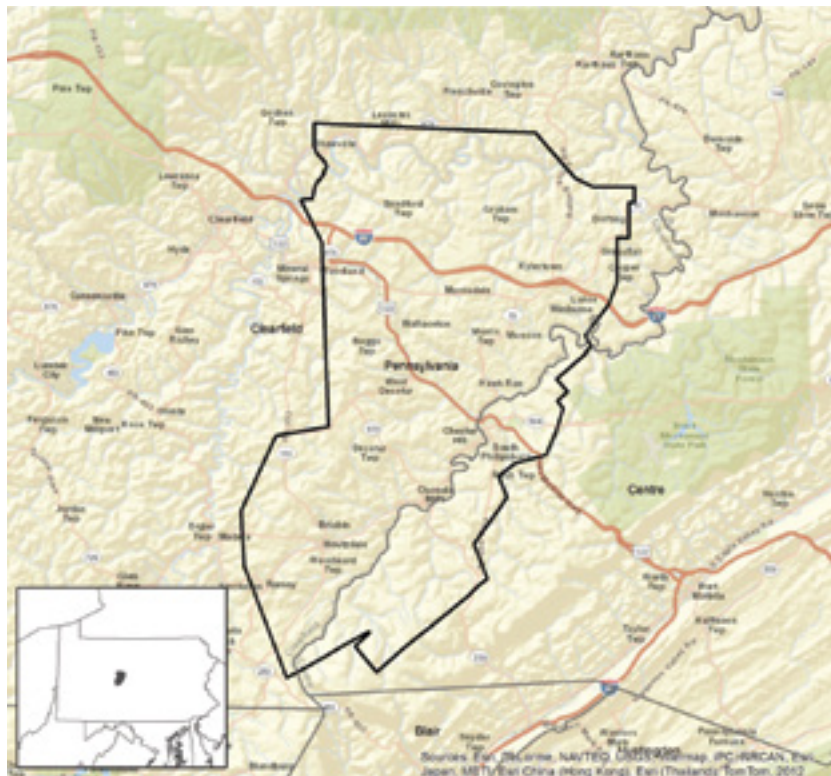
ION's ClearfieldSCAN™, is a 3D multi-client, multi-component seismic survey situated in Clearfield and Centre Counties, in Central Pennsylvania and comprises approximately 238 square miles. Located in the prolific Marcellus shale play with natural gas reserve estimates at 500 trillion cubic feet, this survey has been designed to provide high-quality structural imaging and rock property prediction.

PROGRAM OBJECTIVES

- Provide high quality structural imaging for geo-hazard avoidance
- Better characterize rock properties and natural fracture systems
- Establish what seismic attributes impact drilling and completion decisions
- Better understand key geologic drivers, maximize production and minimize development costs



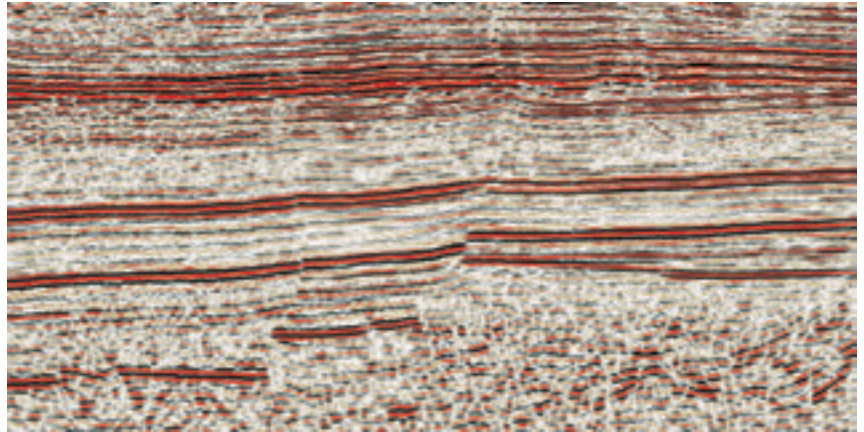
● ION's 3D ResSCANS



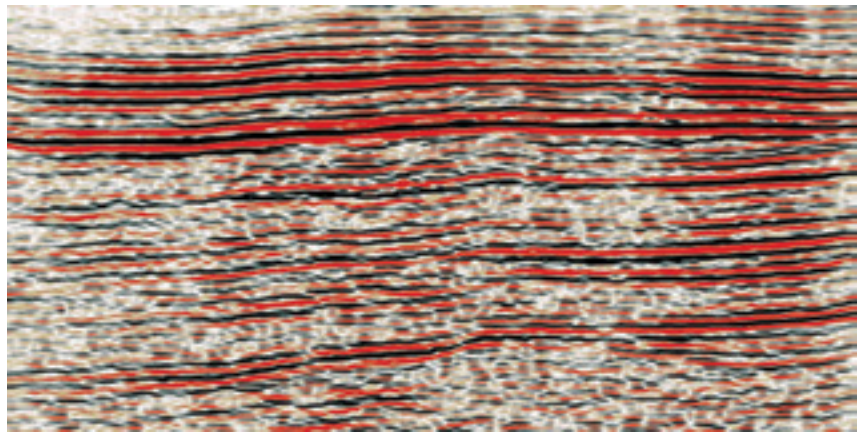
Map of ION's ClearfieldSCAN survey in the Marcellus

KEY ACQUISITION PARAMETERS:

- Receiver line interval: 990 ft.
- Receiver group interval: 300 ft.
- Shot line interval: 900 ft.
- Shot point interval: 300 ft.
- Bin size: 150 x 150 ft.
- Nominal fold: 187



P-wave data from ION's ClearfieldSCAN



C-wave data from ION's ClearfieldSCAN

ABOUT ResSCAN™

ResSCAN programs are 3D multicomponent imaging and characterization programs designed to help E&P companies better understand conventional and unconventional reservoirs to maximize production. Unlike traditional P-wave surveys, ION's seismic approach provides enhanced key rock property insights away from the well bore. The workflow integrates upfront geological, petrophysical, and rock physics analysis to establish which seismic attributes best predict key reservoir properties and impact drilling and completions engineering decisions. The enhanced imaging and seismic attribute analyses enable operators to evaluate and address key challenges associated with geohazard identification and avoidance, reservoir characterization, and completions effectiveness.

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