URTeC2019

July 22–24 | Denver, CO

BOOTH 434

EMERSON

EMERSON E&P SOFTWARE **PRESENTATION SCHEDULE**

Monday July 22	Title	Supporting Technologies
10:00 AM	A Cloud Native Platform for Optimal Recovery of Unconventional Resources - Virtual Metering to Virtual Production Log	Paradigm k™
10:30 AM	Understanding Natural Fractured Systems with Diffraction Imaging and Azimuthal Inversion	EarthStudy 360™, SeisEarth™
2:00 PM	Improving Horizontal Well Placement through Integrated Reservoir Modeling	SKUA-GOCAD™
3:00 PM	Characterizing Unconventional Reservoirs with a Comprehensive Petrophysical Analysis	Geolog™
3:30 PM	A Cloud Native Platform for Optimal Recovery of Unconventional Resources - Production Optimization	Paradigm k™
5:00 PM	Machine Learning Successfully Predicts Facies Distribution in a Permian Basin Dataset	Rock Type Classification
5:30 PM	Precision Depthing: Globally Matching Seismic Data to Well Data in the Depth Domain for Optimal Placement and Steering	Explorer™
Tuesday July 23	**Title**	**Supporting Technologies**
9:30 AM	Improving Horizontal Well Placement through Integrated Reservoir Modeling	SKUA-GOCAD™
10:00 AM	A Cloud Native Platform for Optimal Recovery of Unconventional Resources - Production Optimization	Paradigm k™
10:30 AM	Characterizing Unconventional Reservoirs with a Comprehensive Petrophysical Analysis	Geolog™
2:00 PM	Understanding Natural Fractured Systems with Diffraction Imaging and Azimuthal Inversion	EarthStudy 360™, SeisEarth™
3:00 PM	Machine Learning Successfully Predicts Facies Distribution in a Permian Basin Dataset	Rock Type Classification
3:30 AM	A Cloud Native Platform for Optimal Recovery of Unconventional Resources - Virtual Metering to Virtual Production Log	Paradigm k™
5:00 PM	Precision Depthing: Globally Matching Seismic Data to Well Data in the Depth Domain for Optimal Placement and Steering	Explorer™
5:30 PM	Improving Horizontal Well Placement through Integrated Reservoir Modeling	SKUA-GOCAD™
Wednesday July 24	**Title**	**Supporting Technologies**
9:30 AM	A Cloud Native Platform for Optimal Recovery of Unconventional Resources - Virtual Metering to Virtual Production Log	Paradigm k™
10:00 AM	Machine Learning Successfully Predicts Facies Distribution in a Permian Basin Dataset	Rock Type Classification
10:30 AM	A Cloud Native Platform for Optimal Recovery of Unconventional Resources - Production Optimization	Paradigm k™

PRESENTATION ABSTRACTS

A Cloud Native Platform for Optimal Recovery of Unconventional Resources - Virtual Metering to Virtual Production Log
Paradigm k is a native Cloud-based digital oilfield platform capable of monitoring, processing and interpreting large volumes of data in real time. It seamlessly connects live data from sensors to an integrated reservoir-well-surface facilities simulator and analytics. In this presentation, we show how Paradigm k enables virtual metering and virtual production logging. It is a smart software application that performs computation of the forward and inverse problems (history matching) in real time, at startlingly high speed, to render information at any location in the oilfield where measured data, including virtual metering and virtual production logging, is not available. Paradigm k can construct the response of the production logging tool (VPL) from heel–to–toe of the horizontal wellbore and forecast its evolution in time, offering an alternative to costly repeat production-logging campaigns in horizontal wells.
Supporting Technology: Paradigm k™

A Cloud Native Platform for Optimal Recovery of Unconventional Resources - Production Optimization
Paradigm k is a native Cloud-based digital oilfield platform capable of monitoring, processing and interpreting large volumes of data in real time. It seamlessly connects live data from sensors to an integrated reservoir-well-surface facilities simulator and analytics. In this presentation, we show how Paradigm k enables autonomous history matching and accurate production allocation through virtual metering, and anticipates events to optimize the performance of an entire oilfield. It enables decisions such as when to initiate artificial lift for maximum production, and continuously updates optimal gas injection during the entire life of producing wells.
Supporting Technology: Paradigm k™

Characterizing Unconventional Reservoirs with a Comprehensive Petrophysical Analysis
Shale reservoirs are heterogeneous in nature, with facies that differ in mineralogy and geomechanical properties. We present a workflow that evaluates the mineralogy and geomechanical rock properties of an offset well, and incorporate that information into the planning stages of a horizontal well. Ideally, geologists can take advantage of their knowledge of geomechanical facies and optimally place a well in such a way that it leads to better placement within the reservoir sweet spot.
Supporting Technology: Geolog™

Machine Learning Successfully Predicts Facies Distribution in a Permian Basin Dataset
One of the leading challenges in hydrocarbon E&P is predicting rock types and fluid content distribution throughout the reservoir away from the boreholes. In this presentation, we demonstrate the application of a neural network-based machine learning methodology called Democratic Neural Network Association (DNNA) to the problem of finding oil-filled packstones in the Middle Wolfcamp, Eastern Shelf of the Permian Basin, Texas.
Supporting Technology: Rock Type Classification

Improving Horizontal Well Placement through Integrated Reservoir Modeling
Finding the optimal horizontal well configuration in shale reservoirs is challenging. Well locations, orientation, length, and number and geometry of hydraulic fracturing stages have a direct impact on hydrocarbon production performance. A representative subsurface reservoir description can help determine the best well configurations, resulting in improved well productivity and profitability. This can be achieved through building an integrated reservoir model using all available data.

An integrated workflow is presented. A high-resolution geological model is created using seismic attributes, seismic interpretations, petrophysical descriptions, geomechanical and microseismic data. Information from completed wells is calibrated with the key geological parameters. Optimal well locations and treatment stages are proposed.
Supporting Technology: SKUA-GOCAD™

Precision Depthing: Globally Matching Seismic Data to Well Data in the Depth Domain for Optimal Placement and Steering
Accurate control and knowledge of depth positioning of target formations are very important for well planning and geosteering. It is common to observe misties when seismic horizons are correlated to the well tops, especially when the seismic interpretations are performed on time domain seismic data. Most of the industry-adopted workflows for seismic-to-well calibration do not honor the basic assumptions of seismic velocity model building, and produce non-geological velocities with artifacts.

This presentation demonstrates an innovative technology for precision depthing, velocity calibration and global seismic-to-well matching. This technology, known as well tie time-preserving tomography, honors the physics of the problem. In addition, we combine this technology with geostatistical methods to tackle the uncertainty of the predicted values in between wells.
Supporting Technology: Explorer™

Understanding Natural Fractured Systems with Diffraction Imaging and Azimuthal Inversion
Onshore seismic data contains information about small-scale geologic features that is generally suppressed by conventional seismic processing and imaging methodologies. These features may cause production variabilities along laterals in unconventional reservoirs and must be properly characterized for accurate production predictability, the avoidance of well loss (drilling fluid), and other completion problems. This presentation includes case studies using diffraction imaging and azimuthal residual moveout inversions to characterize small-scale natural fracture systems in the subsurface. Natural fracture characterization generated from full-azimuth angle gathers in depth domain delivers reliable results that are easily validated with production data.
Supporting Technologies: EarthStudy 360™, GeoDepth™

Times don't work? Please contact our booth staff to arrange a private demo!