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Geological – Seismic Work Flows and the Construction of Integrated Geologic Maps

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GEOSEIS Inc. has developed a disciplined process to efficiently produce quality integrated well-seismic maps. We produce quality depth structure and isopach maps from a diverse mix of hundreds of well picks together with interpretation measurements made on a diverse mix of multiple vintages of 2D and 3D data. This opportunity identification process is of value to anyone assessing an area with lots of data looking for additional exploitation and exploration opportunities; i.e., the 'upside' potential of an area.

Using a case history, we will illustrate the process and benefits of building high quality maps that use a set of quality geological well picks integrated together with seismic interpretation measurements. The process is designed to be efficient, understandable and insightful, useable by knowledgeable interpreters, as well as repeatable.

The traditional work flow for the geological process is done in depth, the geologist's and world's frame of reference. The seismic interpreter's work flow is done in two-way time. We will show how the work flows can be correlated at several points during the work process to produce integrated maps in depth. These maps are superior to the best maps that can be produced from either the well data alone or seismic data alone. The integrated well – seismic maps show un-drilled features and anomalies by mapping available 2D/3D seismic observations in the context of what has already been drilled.

Today, geologists use a computer-supported geological toolkit with data; e.g., geoSCOUT, AccuMap, GeoGraphix, etc. to assist them with their interpretations. Likewise, geophysicists use a seismic interpretation system; e.g., SeisX, WinPICs, SeisWare, KINGDOM etc. These individual systems do not yet communicate optimally between each other, even when presented under the same system umbrella by the same software vendor. GEOSEIS's integration process is intended to be effective regardless of which geological or seismic toolkits are used by the geoscientists involved.

GEOSEIS's process produces maps that are the "best of the best" that combine all of the well and seismic subsurface data available into up-to-date maps that can be used to support opportunity assessment and decision making.

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