

Geophysics: Creating Economic Independence in Southeast Asia

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Summary

Considering the challenging times in the Canadian Oil and Gas industry for the geoscience professions, this talk will highlight the successful and value added application of geoscience work on behalf of a Canadian oil and gas company in Southeast Asia. The work processes will be outlined and the value they add will be quantified throughout the presentation. In addition, the newly identified oil and gas resources will be quantified which, in the future, may trigger the beginning of the country's hydrocarbon independence.

The relevant geology, stratigraphy and structural regimes will be presented as a backdrop to the geophysical mapping and analysis of recently defined prospects over a Laos oil and gas concession (Figure 1). The closest production is from the SinPhaHorn gas field to the west, in the same basin but on the Thailand side. The field was discovered in 1983 and currently produces 90 Mmcf/day. A total of 2600 km of 2D legacy seismic lines have been acquired over the concession area covering 2.9 million acres and have been integrated into the interpretation and mapping (Figure 2).

Only three wells have been drilled in the country to date, with one drilled on the concession. The exploration in the area started in 1990 and has had three companies commit to geological field work, geophysical acquisition and minimal well commitments. The most recent well, drilled in 2010 by Salamander Energy encountered C1-C3 gas shows on the mud log in the Triassic and a wet porous carbonate reservoir in the Permian. Oil seeps and bitumen staining have been noted to the east and north of this well.

Following initial 2D seismic mapping with limited amounts of historical data, additional 1990's seismic data was obtained from the Laos government last year. Modern processing techniques and innovative field survey reconstructions were then applied to the dataset to delineate earlier identified prospects. The result of this updated mapping will be shown as well as the value it has added in terms prospect delineation, subsurface image improvement, risk reduction and cost savings in lieu of having to re-acquire the 2D seismic again in the field (Figure 3).

The project economics will be discussed as a result of an independent engineering assessment which required the input of the seismic mapping, geological reservoir parameters, engineering production estimates, and oil and gas prices in the area. The results are very favorable due to the high demand for natural gas in Thailand and anticipated growth in Laos. In addition, if hydrocarbons are discovered in Laos, it will be the first commercial oil and gas production in the country and the beginning of their oil and gas independence from foreign entities.



Figure1: Regional Map Showing Concession Location (Red)

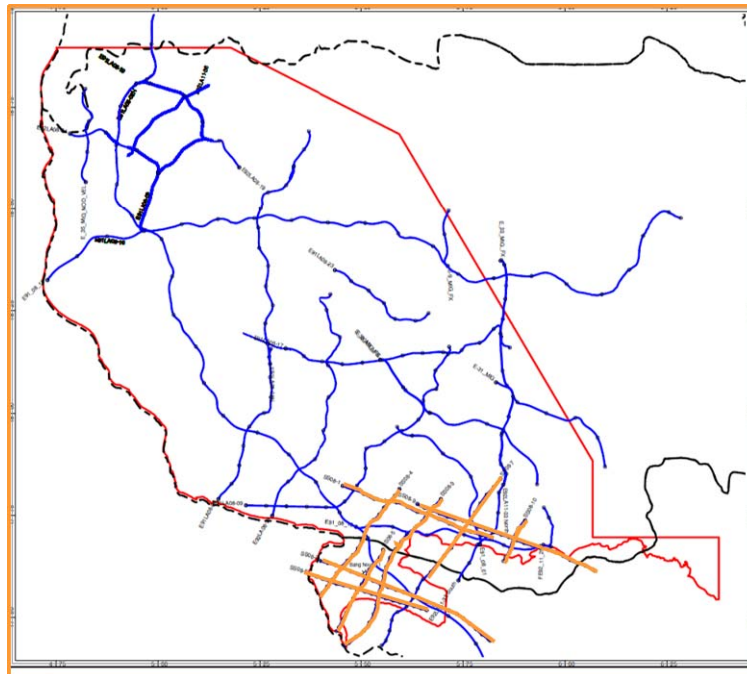


Figure 2: Seismic Control Map – Blue 1990's Vintage, Orange 2008 Vintage

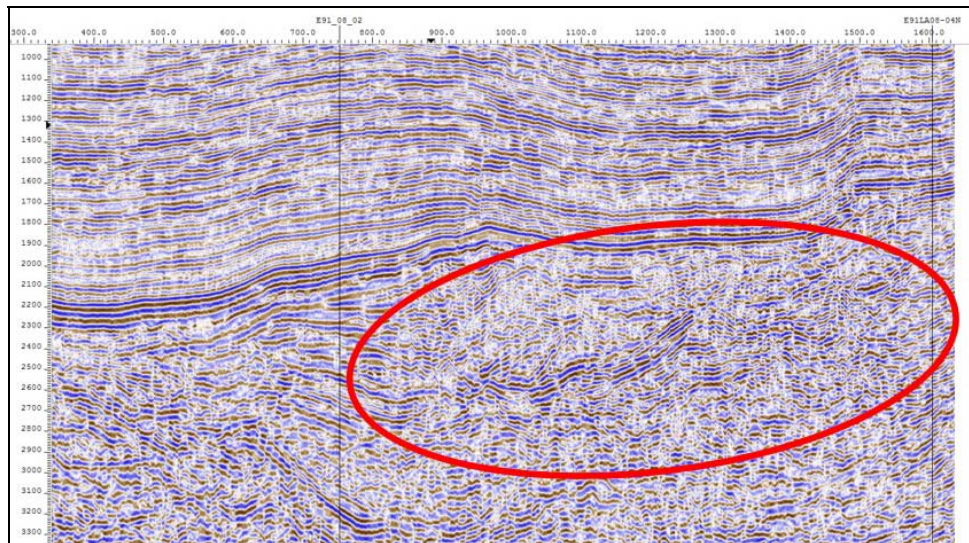


Figure 3: Example of 1990's data quality

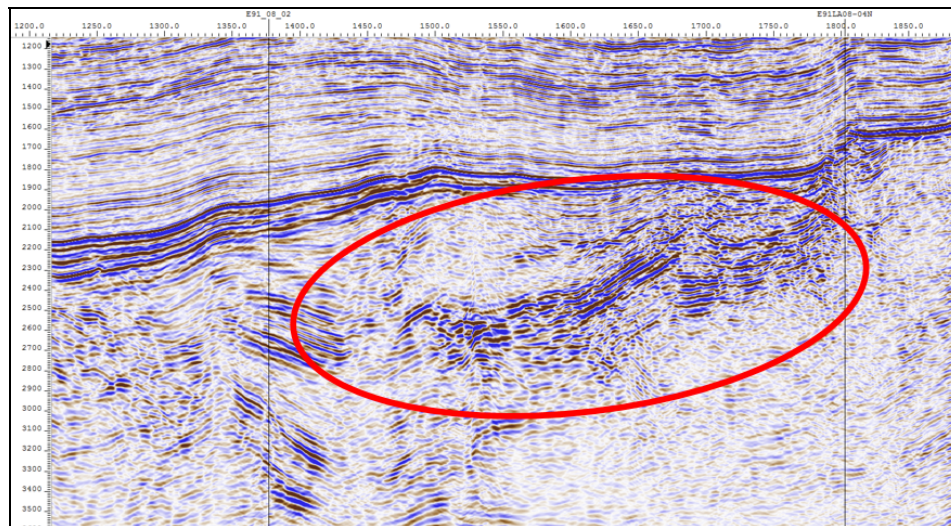


Figure 3: Example of 2015 Seismic reprocessing and quality improvement

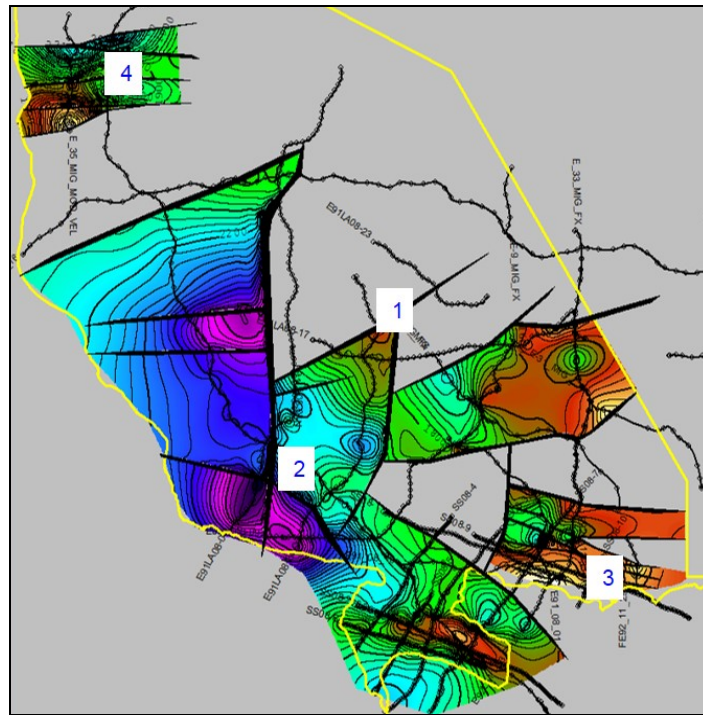


Figure 5: Structure Map – Four Prospects Identified and Quantified