

September 2020 – CSUR Technical Webinar #3

SEISMIC ANALYSIS for UNCONVENTIONAL RESERVOIRS

As we continue to explore unconventional reservoirs, the industry is looking for any & all tools available to improve our understanding of these reservoirs and increase our chances for a successful play or investment. For CSUR's final instalment of the technical webinar series for September, Kathleen Dorey, Managing Partner at Petrel Robertson Consulting & Professional Geophysicist, was the keynote speaker. Her presentation detailed the specifics and intricacies of seismic analysis for unconventional reservoirs.

The focus of the presentation was based on a study area onshore in Nova Scotia. The speaker began with a brief history of the energy industry in the Maritimes, with both onshore & offshore activities over the past few decades. With a declining supply of local natural gas in the region, Kathleen pointed out the significant variation in the consumer price across the country. As a result of the current hydraulic fracturing moratorium in the region and the reduced supply of local natural gas, the region has been forced to incur significantly higher costs for natural gas compared to the rest of the country. This is considered unfortunate given the abundance of oil & gas resources available throughout the country, including substantial onshore natural gas resources in Nova Scotia.

The focus of the presentation then shifted to the specific geophysical techniques utilized to evaluate the potential hydrocarbon accumulations in the Cumberland Basin (study area) using available 2D seismic data from 1980-2000. The speaker very succinctly and methodically explained the process of using p-wave analysis, seismic inversion and facies classifications to evaluate & confirm the deposits. As a result of limited well control in the region, it has been difficult to obtain representative & accurate assessment of the reservoirs. However, using attribute analysis and correlating to available seismic data provided sufficient confidence in generating various maps to identify the formation distributions and thicknesses within the study area. This in turn then provided additional understanding into the geological settings and depositional environments, including the low to high porosity regions for each of the formations. As a result, the study confirmed that three viable unconventional reservoirs, including the Horton Formation, exist in the Cumberland Basin.

ABSTRACT: Unconventional oil and gas reservoirs can benefit greatly from detailed seismic analysis when it comes to determining the type and variation of rock formations within an area of interest. The dataset used in the study area consisted of over 500 km of 2D seismic data with 19 wells of varying depths and quality to tie into the analysis. The talk



TECHNICAL
WEBINAR
SERIES



"SEISMIC ANALYSIS FOR
UNCONVENTIONAL RESERVOIRS"

By Kathleen Dorey, Petrel Robertson
Consulting Ltd.

will cover the geophysical methods used in the study such as p-wave analysis, seismic inversion and facies classifications and how this was used to map the formation distributions and thicknesses within the area. As a result insights can be provided as to the environments of deposition of the three key resource plays as well as guide plans for future exploration and development.

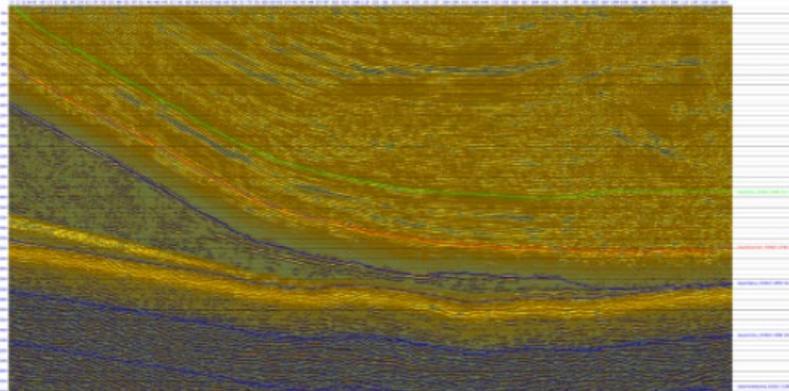


Figure 1: Sample inverted seismic line with facies interpretation

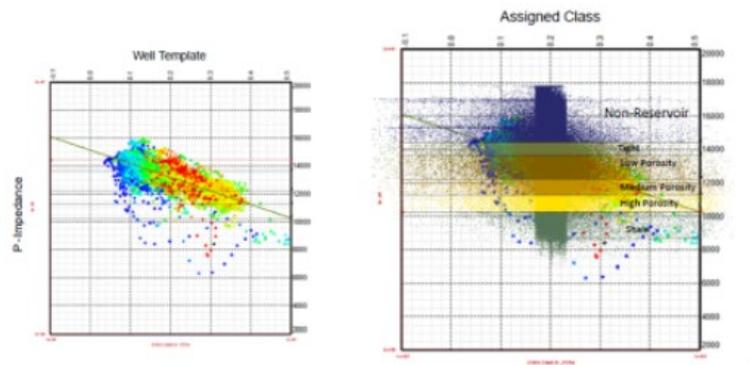


Figure 2: Analysis and resulting facies classifications

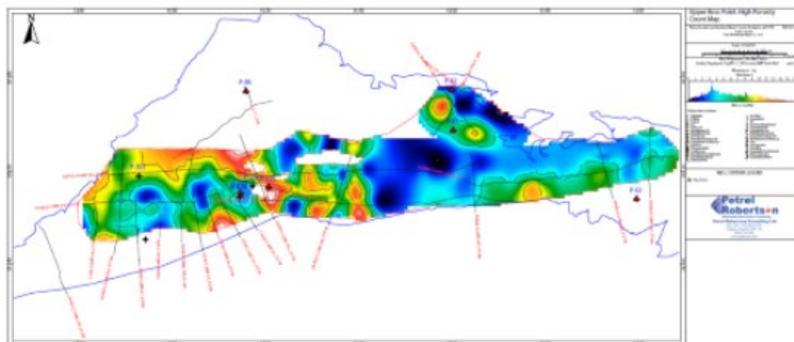
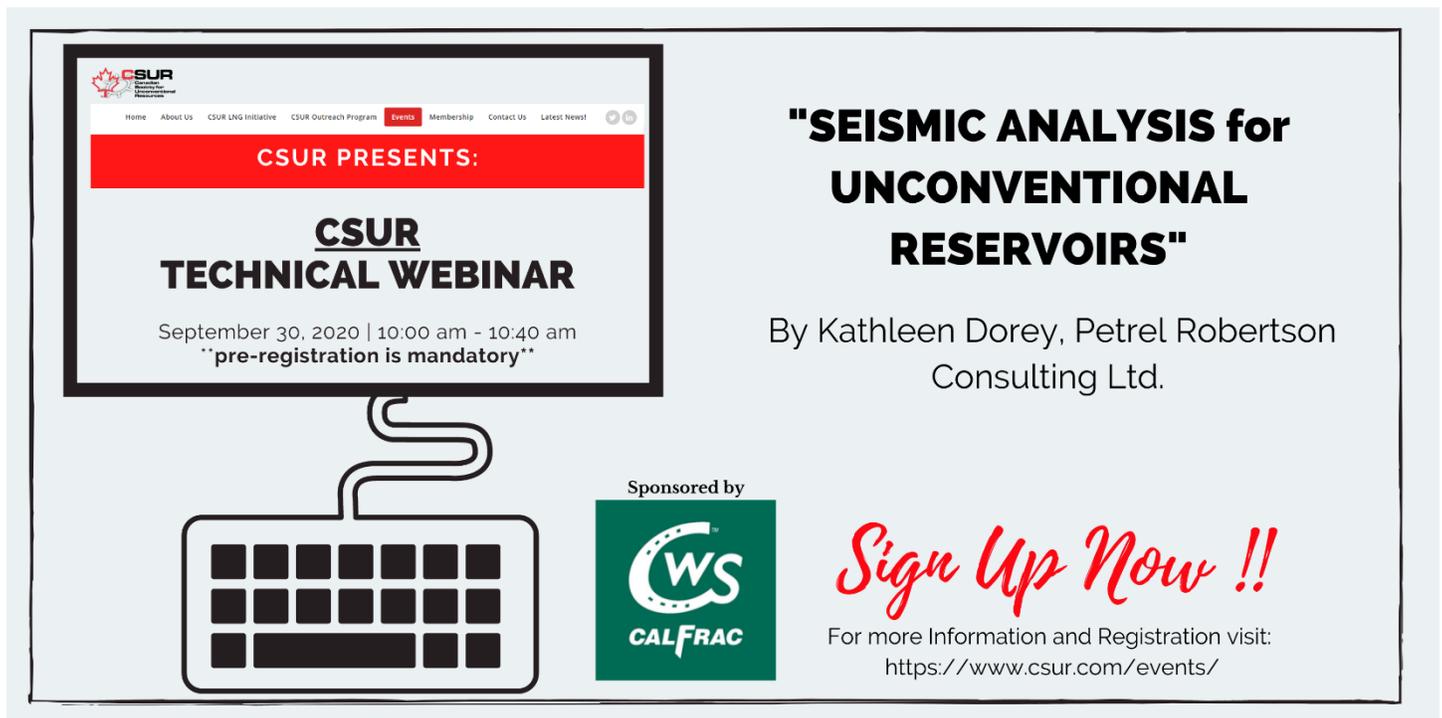


Figure 3: Sample facies map showing high porosity on the west side of basin

PRESENTER: Kathleen Dorey, Petrel Robertson Consulting Ltd.

As a managing partner of Petrel Robertson Consulting in Calgary, Canada, Ms Dorey leads a team of geoscience professionals consulting to industry, government, and financial institutions in more than 40 countries worldwide. She works all aspects of oil and gas geoscience, from reservoir analysis, through property evaluations and strategic assessments, to forming the exploration and development groups for companies. Kathleen has an Honours Bachelor of Science degree from Western University in Canada, is a Professional Geophysicist and is a member or past member of the CSEG, SEG, CSUR, CSPG and APEGA. In her past she has worked as a Geophysicist in major operating companies such as Texaco, Conoco and BG as well as for many junior oil and gas companies. Kathleen has contributed to and presented talks for the CSEG, EAGE, CSPG, CGEF, UGTF, AAPG, APEGA and Petrotech. She is Past Chair of the CSEG Foundation, has served on the GeoConvention Board of Directors, is a past member of the CSEG Executive, served as Session Chair for the GeoConvention since 2013 and is a past SEG Convention Program editor.



"SEISMIC ANALYSIS for UNCONVENTIONAL RESERVOIRS"

By Kathleen Dorey, Petrel Robertson Consulting Ltd.

Sign Up Now !!

For more Information and Registration visit:
<https://www.csur.com/events/>