

## Use of multicomponent seismic data to identify the Canol Shales

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### Summary

The elastic properties of Canol shales make it difficult to identify them on the PP waves but not on the PS waves. The response for the Middle Canol has a strong shear wave reflectivity that shows as a strong reflection on PS seismic data. This allows the mapping of the thickness of the Canol interval with confidence.

### Introduction

During 2012-2013 over 560 km of 2D / 3C of seismic data were acquired in the North West Territories (Canada). This paper will show the results of a 2D line and the benefits of using the converted wave (PS) for delineation of the Middle Canol and a better understanding of the complexity of the Lower Canol by using simultaneous inversion.

### Method

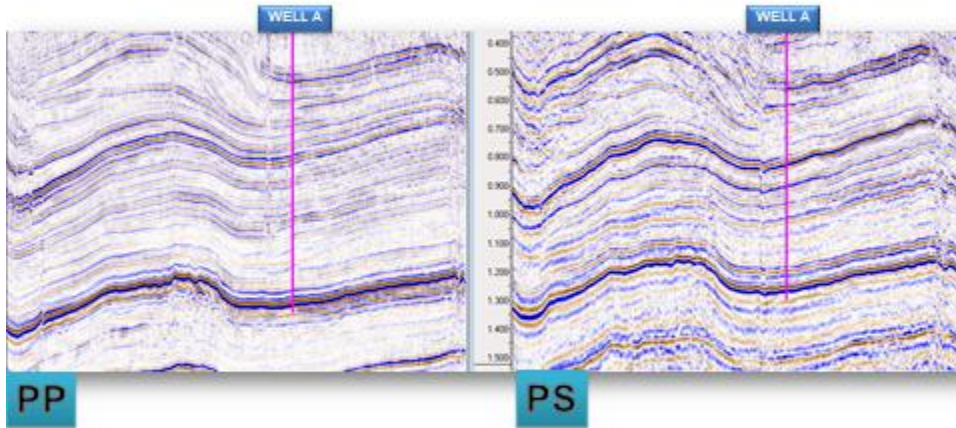
Forward modeling of well, cross plots and correlation were used before inversion to understand the elastic properties of the different Canol members.

Simultaneous inversion (PP only) and Joint inversion (PP and PS) were evaluated to understand the benefits of incorporating the PS wave Gathers into the inversion.

## Examples

### PSTM stacks – PP time

48



project number



Figure 1 PP and PS PSTM stacks in PP Time

### Others Benefits: Better VP/VS ratio for PP&PS Joint inversion <sup>7</sup>

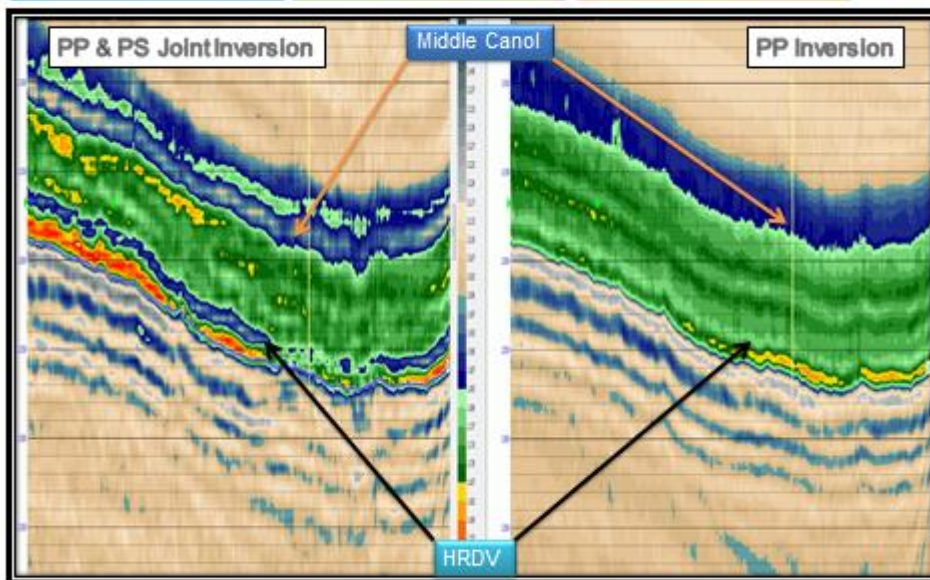


Figure 2 Comparisons of Joint and Simultaneous Inversion

## **Conclusions**

- Excellent Quality P-wave and PS- wave in the area of study
- Major events have good correlation between P and PS waves
- Frequency of Converted wave in PP time is close to 70 Hz.
- Strong event above Hume formation could be associated with Middle Canol Shale unit.
- Simultaneous AVA Joint (PP&PS) Inversion gives a better  $V_p/V_s$  ratio than only Simultaneous (PP) AVA inversion

## **Acknowledgements**

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