

Second White Specks Oil Project

Phase II

Willesden Green, Alberta

Canadian Discovery Ltd. (CDL) and Graham Davies Geological Consultants Ltd. are pleased to announce the implementation of the second phase of their ongoing investigation of the Second White Specks Zone (2WS). The first phase, centred on Pine Creek, successfully integrated a number of diverse geological disciplines that resulted in a new fracture fabric concept to explain the prevalence of oil production in shalier intervals. This contributed to the identification of several new play fairways for oil in the 2WS. Phase II is centred on the Willesden Green area and will build on the knowledge of Phase I. It will again incorporate geochemistry, hydrogeology, reservoir characterization, rock mechanics and stress, and structure mapping to extend oil play fairways and identify new regions for exploration.

Image above: Core image of unidirectional to bidirectional starved silt-sand ripple laminae interlaminated with shale/ms in higher-gamma, deeper base of upper shoaling-up cycle in Karr area

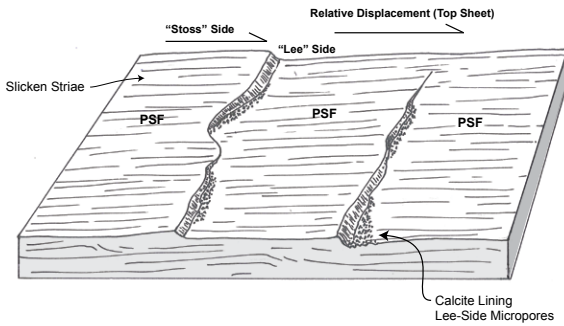
PSF Surface



Sketch of PSF on bedding plane with parallel slicken striae disrupted by microscale "steps" or "asperities"



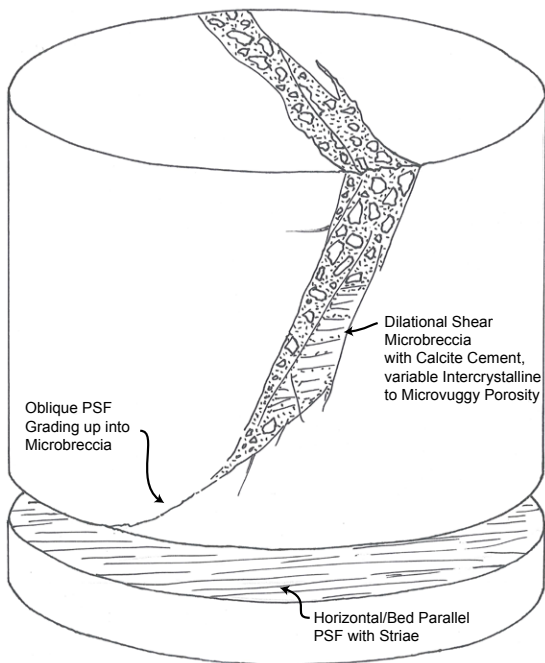
Schematic of PSF



Schematic of PSF with parallel slicken striae, showing "steps" or "asperities" at high angle to slicken, with intermittent development of open micropore space lined by euhedral calcite crystals on lee side of steps



Dilational Shear Microbreccia on an Oblique PSF



Sketch of calcite-cemented dilational shear microbreccia developed along inclined PSF, gradational downward into horizontal bed-parallel PSF

Fracture Fabric, Polished Slip Faces (PSF)

Scope of Study

In the Phase I study, it was realized that there are several key components that must be in place to create a viable 2WS oil resource play:

- ▶ Facies controlled background of regional reservoir is the primary oil storage component.
- ▶ The zone must be overpressured and hydrocarbon saturated (Deep Basin).
- ▶ The zone must be in the oil window and there must be an adequate source rock for oil production.
- ▶ Productive areas are located within regions of low minimum principal stress.
- ▶ In shalier intervals, there must a fracture fabric to enhance porosity and permeability.

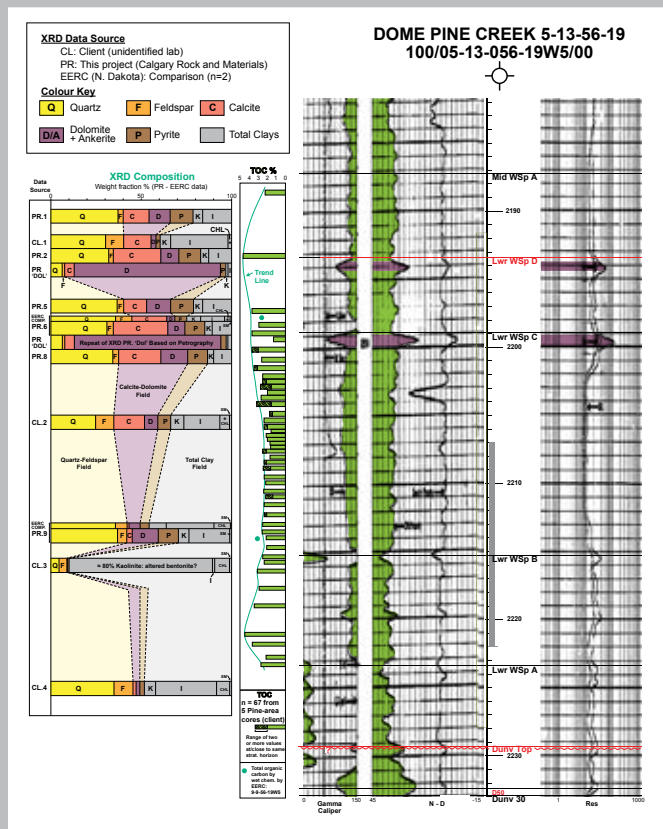
Each of these components will be investigated in the proposed study. A full reservoir characterization, including petrophysics, will be based on core and will incorporate all public analytical data as well as proprietary analyses. The hydrogeological setting will be determined from all the existing pressure data in the area. The source rock and thermal maturity of the zone will be investigated using both public and proprietary geochemical analyses. The minimum principal stress maps will be created from CDL's proprietary Well Completions & Frac Database. The structural and fracture fabric will be determined from a combination of core examination and high-resolution structural mapping. Rock mechanics will be determined from available public data and petrophysical analysis of dipole sonic logs.



Above: Study areas

Next page, large image: Ripple laminated very sandy, microbioclastic coarse laminae with clay drapes within dolomite marker interval

Small: Lower 2WS composite profile, Pine Creek area



Deliverables

Reservoir Characterization

- ▶ Core descriptions, thin-section and core photos, SEM images
- ▶ Log-core-facies correlations
- ▶ Mineralogical plots and tables from XRD
- ▶ Diagenesis, depositional environment, sequence stratigraphic framework descriptions
- ▶ Pore types, porosity permeability relationships, petrophysical relationships from core
- ▶ Structural fabrics of the 2WS
- ▶ 2WS petrophysical model

Geological and Reservoir Mapping

- ▶ Isopach maps and third-order residual isopach maps of stratigraphic units
- ▶ Structure maps, third-order residual structure maps, lineament and wellbore breakout analysis
- ▶ Net Reservoir, porosity, water saturation and oil resource maps

Geochemistry Maps

- ▶ Kerogen analysis from Rock Eval data
- ▶ TOC maps from analytical (Rock Eval) and petrophysical analyses
- ▶ Thermal maturity maps from Rock Eval and vitrinite data (Ro, Bro)
- ▶ Hydrocarbon Index Maps from Rock Eval data
- ▶ Geothermal gradient and current day formation temperature maps
- ▶ API gravity and Wet Gas Index maps

Hydrodynamics

- ▶ DST/AOF/oil pressures hydraulic systems map
- ▶ Pressure versus elevation graph
- ▶ Pressure depth ratio map
- ▶ Head maps

Stress Maps

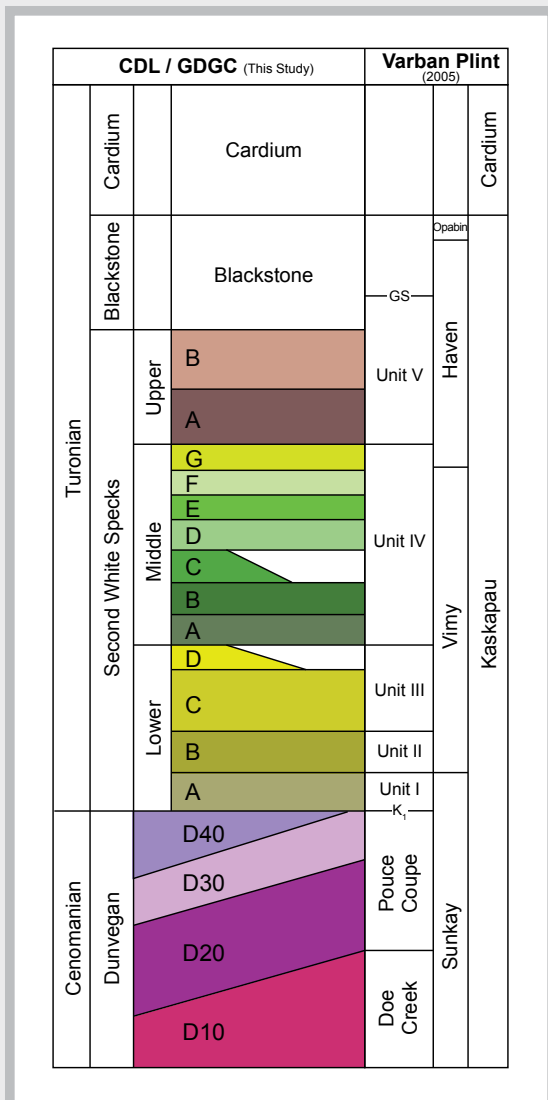
- ▶ Minimum principal stress gradient map
- ▶ Effective stress difference map
- ▶ Drilling problems analysis
- ▶ Brittleness index analysis

2WS Production Trends

- ▶ Cumulative and initial production maps
- ▶ Identification of perforated intervals by well event
- ▶ Production plots by zone and/or facies

Interim and Final Delivery

- ▶ Interim review of progress at mid-point of study
- ▶ Final summary maps, play fairway maps
- ▶ Descriptions of critical features
- ▶ Final review of study at completion
- ▶ Core seminar at completion
- ▶ Database of tops, geochemical, hydrogeological and chemistry data



Stratigraphic framework for 2WS in central Alberta of WCSB with correlations to subdivisions for time-equivalent (approx.) Kaskapau Formation from Varban and Plint (2005)

Area

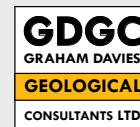
The area of the Phase II project extends from T.26, R.27W4 to T.50, R.18W5. It overlaps Phase I by one township at its north end (T.50). It is roughly constrained by the edge of the Mesozoic Deformed Belt to the west and the updip limit of mature, overpressured source rocks to the east. The study encompasses over 240 townships.

Purchase Details

Pre-Completion: \$55,000[†]
 Post-Completion: \$62,500[†]
 Delivery: Q4 2012

[†] plus applicable taxes

In partnership with:



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