Slave Point Hydrodynamics

Non-Exclusive Hydrodynamic and Geotechnical Studies

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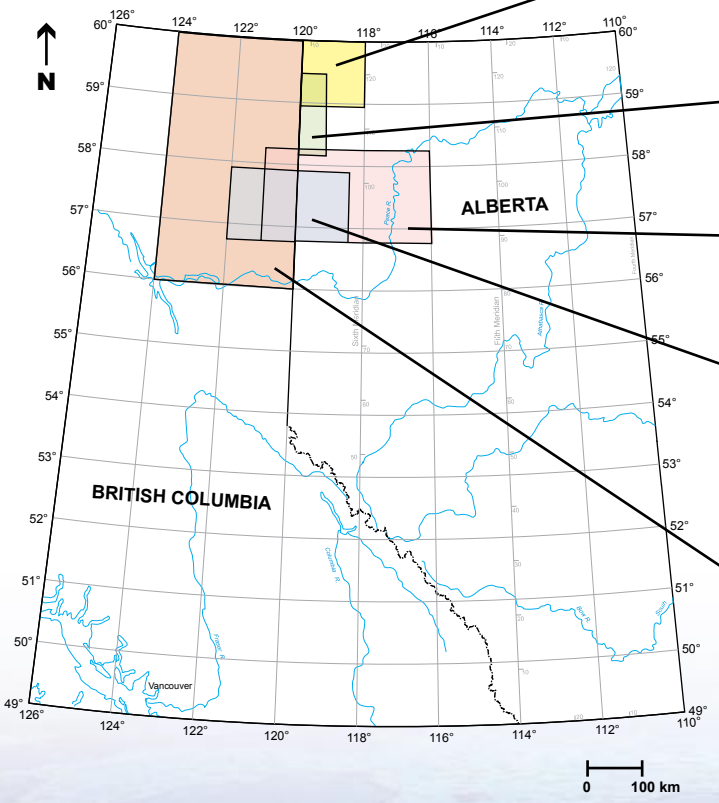
The Key to Success: Hydrodynamic Integration

The Slave Point Formation of northwestern Alberta and northeastern British Columbia has been the target of intense exploration activity from the 1990s to present. Slave Point plays have yielded some of the most significant pool discoveries of the decade, including Chinchaga/Firebird and Ladyfern/South Hamburg.

Recent success has been largely controlled by improved seismic acquisition and interpretation techniques such as 3D and amplitude analysis. Integration of hydrodynamic data to this high risk play type provides an important tool for interpreting both seismic and geologic based data.



Hydrogeologic Investigation of the Slave Point and Sulphur Point Formations in the Bistcho Lake Area of Northwestern Alberta
T. 115-126, R. 1-12W6M

Hydrogeological Evaluation of the Slave Point, Sulphur Point, Muskeg and Keg River Formations
T. 106-120, R. 8-12W6M

Hydrodynamic Study - Slave Point Formation, North of the Peace River Arch Area
T. 90-106, R. 13W5M-Longitude 121°

Ladyfern Geotechnical Study: Exploration Concepts and Stratigraphic Review of the Ladyfern, Slave Point Formation
(Canadian Discovery Ltd., Pulse Data Inc., Arcis Corporation and Westslope Resources Ltd.)

Slave Point Hydrodynamics in Northeastern British Columbia
Latitude 56-60°, Longitude 120-124°

Canadian Discovery Ltd.
integrated geosciences

Hydrodynamic Study - Slave Point Formation, North of the Peace River Arch Area

Introduction

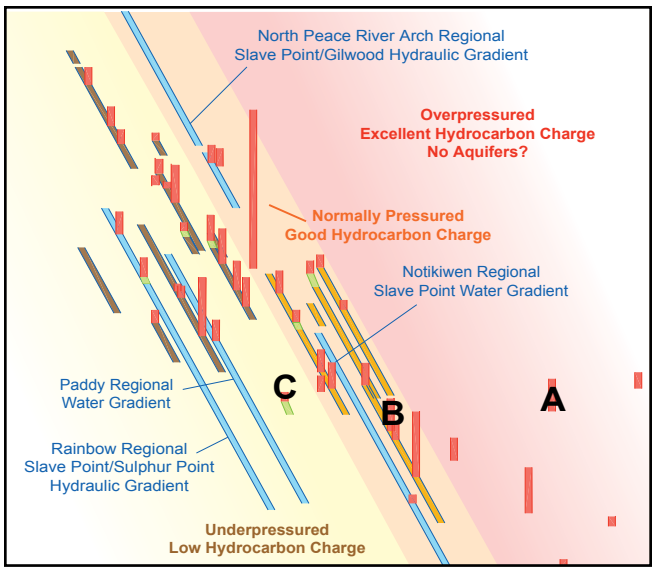
This hydrodynamics based study uses pressure, fluid chemistry and temperature data to provide valuable information on reservoir continuity, fluid contacts, hydrocarbon phase distribution and the impact of pressure compartments on hydrocarbon charge and productivity. The relationship developed between hydrodynamics and regional geology is used to predict new areas where reef bearing embayments occur, as well as play extensions.

Study Area

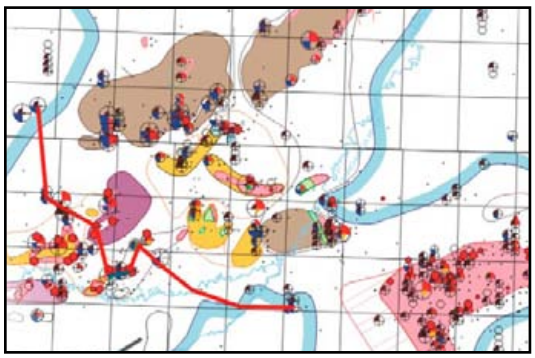
- T. 90-106, R. 13W5M-Longitude 121°

Database

- 912 available DSTs (436 usable extrapolated pressures)
- 169 reliable AOF pressures
- 569 water analyses (206 true formation waters)
- 409 gas analyses



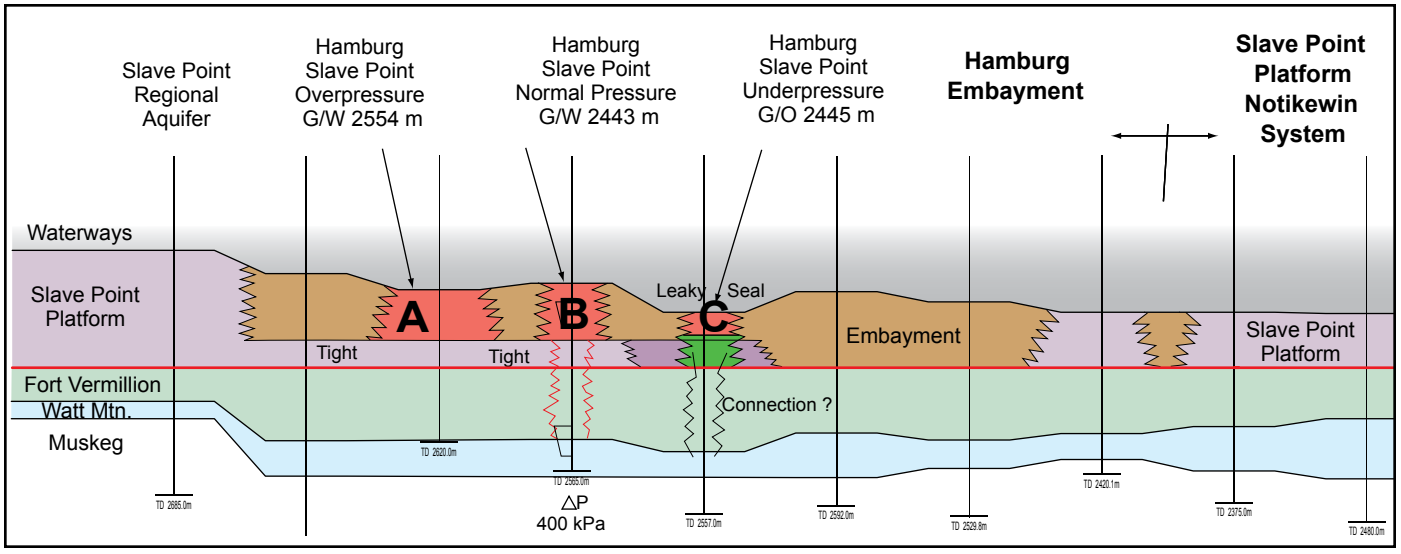
Schematic pressure versus elevation graph showing range of pressure systems



Excerpt from DST recovery map (line of section corresponds to cross-section)

Deliverables

- Hydraulic systems/DST recovery map
- Pressure versus elevation graphs
- Slave Point isotherm map
- Formation water salinity map
- Potentiometric surface map
- Gas chemistry maps (wet gas index, H_2S, CO_2)
- Detailed studies at Hamburg and Lapp/Snowfalll
- Selected hydrostratigraphic cross-sections
- Fluid chemistry, DST and AOF databases
- Comprehensive technical report
- Hard copy and digital PDF delivery



Schematic cross-section through numerous Hamburg pools

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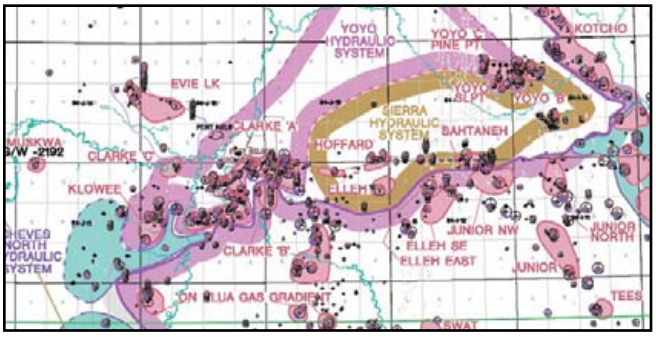
Slave Point Hydrodynamics in Northeastern British Columbia

Introduction

This study evaluates the hydrodynamic framework of the Slave Point Formation in northeastern British Columbia, with emphasis on the relationship of the Hotchkiss Embayment to the Hamburg/Ladyfern and Clarke Lake areas. The study defines Slave Point and Keg River aquifer systems, maps pertinent fluid chemistries (gas and water) and determines current day temperature regimes for the Slave Point. The relationship of thermal maturity to gas chemistry is analysed.



Excerpt from Slave Point/Elk Point hydraulic system/DST recovery map

Study Area

- Latitude 56-60°, Longitude 120-124°
  (NTS blocks 94A, 94B, 94G, 94H, 94I, 94J, 94O)

Database

- 1,359 available DSTs
- 221 valid AOF pressures (63 used)
- 139 gas analyses

Deliverables

- Hydraulic system/DST recovery maps
  (2 regional: A-D and A-G quality codes, 1 detailed)
- Pressure versus elevation montage
- Formation water salinity map
- Potentiometric surface map
- Gas chemistry maps (wet gas index, H_2S, CO_2)
- Geothermal gradient map
- Maximum recorded temperature map
- Pressure and gas chemistry databases
- Comprehensive technical report
- Hard copy and digital PDF delivery

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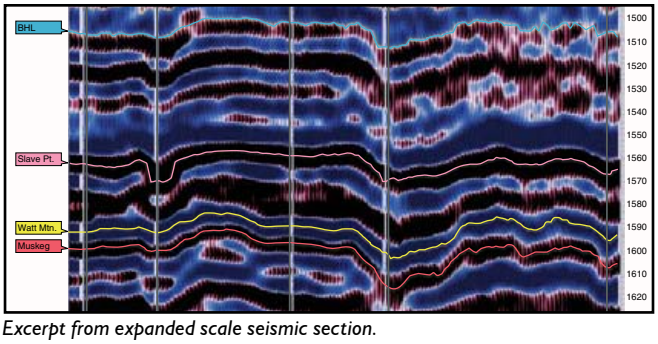
Ladyfern Geotechnical Study:
Exploration Concepts and Stratigraphic Review of the Ladyfern, Slave Point Formation

This study is designed to provide an overview of the Ladyfern region from an integrated geotechnical perspective. The report illustrates geological play concepts and geophysical signatures in an integrated format.

Deliverables

- Ladyfern Geological Setting
- Exploration History
- Five Integrated Geological/Geophysical Templates
- Structural & Stratigraphic Influences
- Exploitation of Ladyfern
- Detailed Production Review
- Collapse Structures
- Fault Patterns and Structural Influences
- Platform, Bank and Off-Bank Facies



Excerpt from expanded scale seismic section.

The Ladyfern Geotechnical Study is delivered as a 145 page bound graphical report, along with a CD-ROM pdf digital version.

Pulse Data Inc
arcis corporation
WESTSLOPE RESOURCES LTD
Canadian Discovery Ltd.

Hydrogeologic Investigation of the Slave Point and Sulphur Point Formations in the Bistcho Lake Area of Northwestern Alberta

Introduction
The Slave Point and Sulphur Point formations are part of an active hydrodynamic system in some areas and more isolated in others. The two zones have marked differences in water chemistries and relative pressures, indicating a lack of vertical communication and lateral trapping potential. Since the area has few producing pools and numerous hydrocarbons shows, significant hydrocarbon potential may exist for these underexploited zones.

This study delivers detailed hydrodynamic analysis of both zones integrated with regional geologic and geophysical mapping, in order to define reservoir continuity, hydraulic breaks, gas/water contacts, water and hydrocarbon distribution and trapping styles.

Study Area
- T. 115-126, R. 1-12W6M

Zones Analysed
- Slave Point, Sulphur Point

Database
- Slave Point
  - 300 DSTs (177 wells with DSTs)
  - 200 water analyses
- Sulphur Point
  - 500 DSTs (299 wells with DSTs)
  - 350 water analyses

Deliverables
- Hydraulic system/DST recovery maps
- Regional and detailed pressure versus elevation graphs
- Total dissolved solids and water resistivity maps
- Hydraulic head maps
- Gas chemistry maps (wet gas index, H_2S, CO_2)
- Structural cross-sections (five)
- Summary technical report
- Hard copy and digital PDF delivery

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Hydrogeological Evaluation of the Slave Point, Sulphur Point, Muskeg and Keg River Formations

Introduction
Pressure versus elevation graphs and DST recovery maps identify an open flow hydrodynamic system dominated by a single water gradient. Areas of overpressure do exist, providing opportunities for the compartmentalized trapping of hydrocarbons between formations.

Study Area
- T. 106-120, R. 8-12W6M

Zones Analysed
- Slave Point, Sulphur Point, Muskeg, Keg River

Deliverables
- DST recovery map for each zone and for all zones combined
- Pressure versus elevation graph for each zone and for all zones combined
- Detailed studies at Rainbow South and Sulphur Point/ Slave Point
- Hard copy and digital PDF delivery

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