

**ULTIMATE OIL AND GAS RESOURCES  
OF THE  
SAHTU AND GWICH'IN  
SETTLEMENT AREAS**

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## **Oil and Gas Resources for the Sahtu and Gwich'in Settlement Areas**

### **Introduction**

The study is a new assessment of the ultimate oil and gas potential for the Sahtu and Gwich'in Settlement Areas and assigns oil and gas volumes by play to derive an overall distribution of discovered and undiscovered oil and gas. The oil and gas volumes are displayed in a series of maps in Excel for each play and aggregated for all plays. Field size distributions are done for each play and aggregated for all plays for both oil and gas.

### **Methodology**

The present study uses the plays outlined by L.P.Gal in NWT Open File 2005-04, "Hydrocarbon Play Map of the Sahtu and Gwich'in Settlement Areas". The play areas of Gal, 2005 have been subdivided based on stratigraphic and structural setting and two new established plays in the Summit Creek area have been defined; (1) the Arnica/Landry and (2) the Upper Cretaceous.

For this study the Palisade Corporation @Risk simulation add-in program for Excel was used to make new assessment for all the plays defined by Gal in Open File 2005-04. The @ Risk simulations allows for both the mean and the median to be derived. In this manner a constant set of estimated values for both mean and median is achieved.

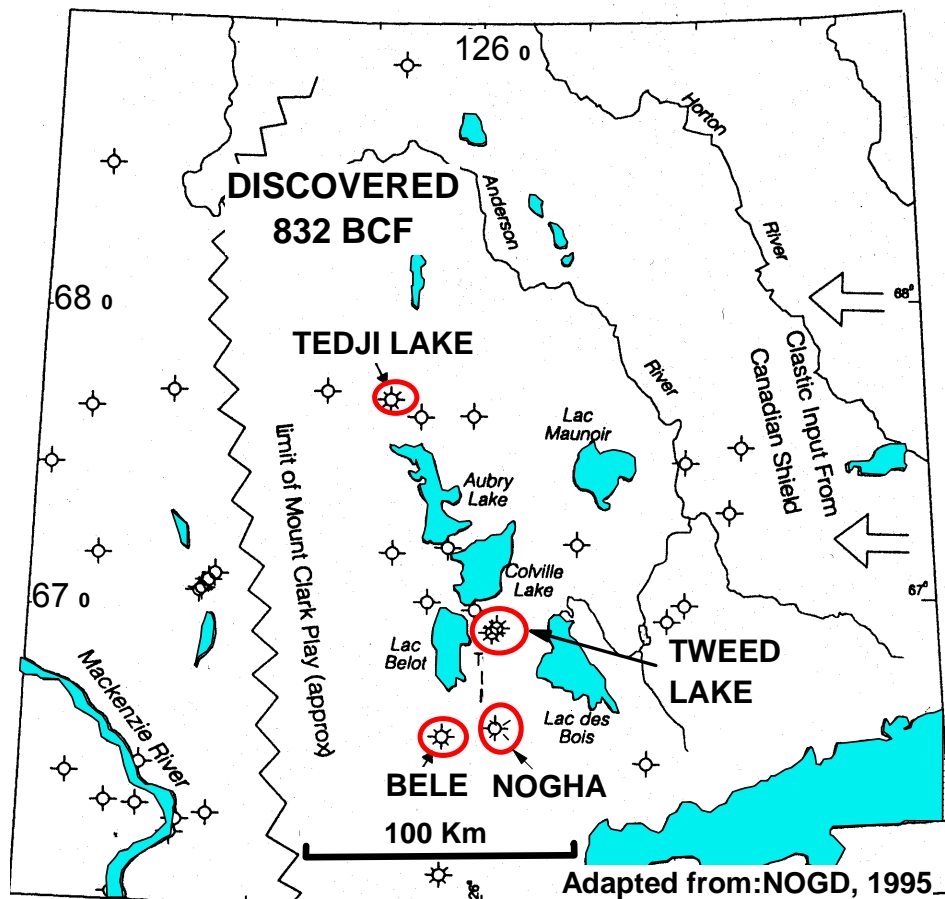
### **Discovered Resources of the Sahtu and Gwich'in Settlement Areas**

A list of all discovered oil and gas fields, with discovered oil and gas reserves and resources has been compiled in Excel, shown in tables 1 and 2. Field sizes are the mean values of a probabilistic distribution. The estimates for the Colville Hills Cambrian gas fields were done by the author using @Risk, based on published information. The @Risk input and results for these fields is shown in appendix A. It should be noted there is both downside and upside potential associated with the field size estimates. The total discovered recoverable oil and gas resources for the Sahtu Settlement Area is 301.6 million barrels of oil and 832.4 billion cubic feet of natural gas. There are four discovered gas fields and one oil field. There are no discoveries to date in the Gwich'in Settlement Area.

Recent oil and gas discoveries have been made in the Summit Creek area of the Sahtu Settlement Area, however results are still confidential. These discovered resources are included with the undiscovered for this report.

## APPENDIX A

### COLVILLE HILLS DISCOVERED GAS FIELDS



There are four discovered gas fields in basal Cambrian sandstones in the Colville Hills. The four fields; Tweed Lake, Tedji Lake, Bele, and Nogha, contain total recoverable gas resources of 832.4 billion cubic feet. A detailed description of Tweed Lake, Tedji Lake, and Bele is given by E.Janicki in NWT Open Report 2004-006.

Discovered gas resource estimates were determined for the four fields in @Risk using pool reservoir parameters based on published information, which includes; Janicki, 2004, Bever and McIlreath, 1992, Hamblin, 1990, Dixon, 1997, National Energy Board, 1993, and Price, 1997. The reservoir parameters, @Risk input and results for the four fields follow.

## APPENDIX B

### PLAY SUMMARIES

Basal Cambrian – Play Areas 1 and 2

Ordovician-Silurian – Play Area 1

Arnica / Landry – Play Areas 1, 2 and 3

Kee Scarp/Ramparts – Play Areas 1 and 2

Plateau Thrust – Play Area 1

Tuttle – Play Area 1

Permian – Play Area 1

South Delta Paleozoic – Play Area 1

South Delta Mesozoic – Play Area 1

Jurassic – Play Area 1

Cretaceous – Play Areas 1, 2, 3 and 4

Upper Cretaceous – Play Area 1

For a detailed description of the plays the reader is referred to Gal, L.P., 2005, NWT Open File 2005-04, and Lariviere, J.M. and Gal, L.P., 2005, NWT Open File 2005-02.