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Combined Triassic/Jurassic Gas Assessment Unit 52430401

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Alberta Basin Geologic Province 5243

Other geologic province boundary

Geologic Summary

Detailed map of this assessment unit

Exploration/Discovery-History Data

- Plots of Known Field Sizes
- Tables

Assessment Input Data

Assessment Results

- Assessment Unit Summary
- Detailed Assessment Results
- Undiscovered Field-Size Distributions

USGS PROVINCES: Alberta Basin and Rocky Mountain Deformed Belt (5243 and 5245)

GEOLOGIST: M.E. Henry

TOTAL PETROLEUM SYSTEM: Combined Triassic/Jurassic (524304)

ASSESSMENT UNIT: Combined Triassic/Jurassic Gas (52430401)

DESCRIPTION: This gas assessment unit includes areas of the deformed belt where thermally mature Triassic and Jurassic source rocks are known or are likely to exist and a small part of the Alberta Basin in northeast British Columbia. The boundary was drawn to enclose an area in which gas is expected to dominate future hydrocarbon discoveries.

SOURCE ROCKS: Principal source rocks for this unit include the Middle Triassic Doig Formation and the Lower Jurassic "Nordegg" member of the Fernie Formation. Recent work suggests that several other Triassic rock units have source potential in this assessment unit.

MATURATION: Source rocks within this unit are almost entirely overmature with respect to liquid petroleum generation.

MIGRATION: The distribution of gas pools assigned to this unit in relation to the distribution of mature source rocks indicates that long distance migration is not necessary. Published detailed geochemical analyses suggest, however, that Jurassic oils may have contributed minor volumes to nearby, unconventional, bitumen deposits.

RESERVOIR ROCKS: The predominant reservoir rock type in this unit is carbonate but sandstone reservoirs are common. Triassic reservoirs are evenly divided between sandstone and carbonate and Jurassic reservoirs are almost exclusively sandstone.

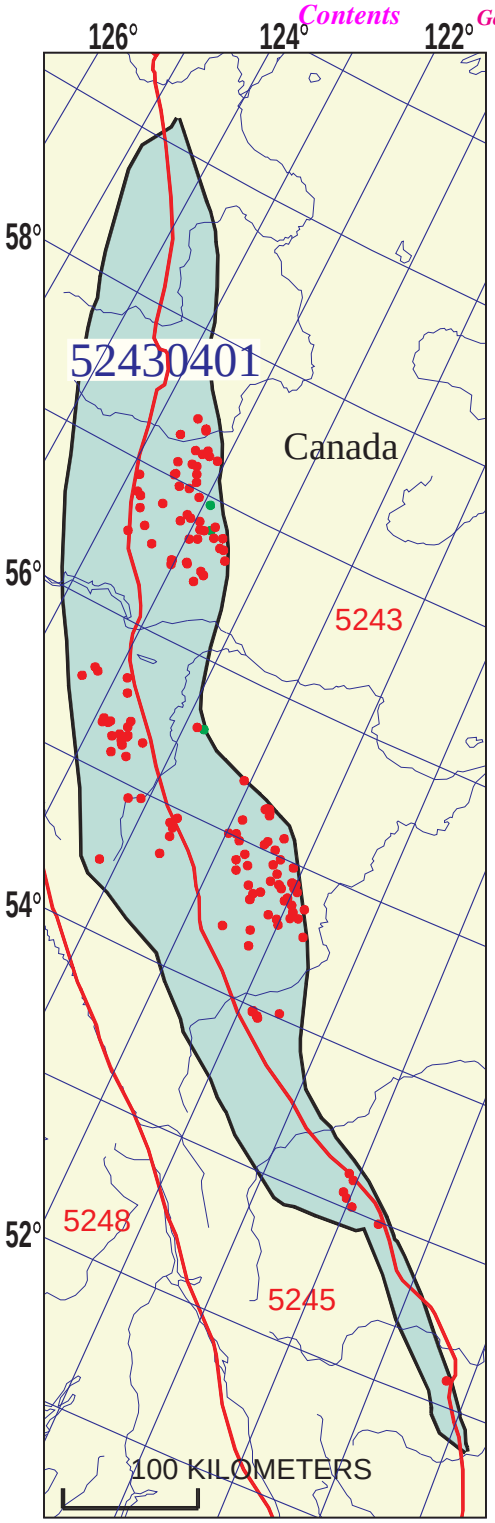
TRAPS AND SEALS: Traps in the unit are evenly divided between structural and stratigraphic types. Structural traps are most common for Triassic pools and combination traps are most common for Jurassic pools. Evaporites and shales generally form seals in this unit.

REFERENCES:

Creaney, S., Allen, J., Cole, K.S., Fowler, M.G., Brooks, P.W., Osadetz, K.G., Macqueen, R.W., Snowden, L.R., and Riediger, C.L., 1994, Petroleum generation and migration in the Western Canada sedimentary basin, *in* Mossop, G.D., and Shetsen, I., comps., Geological atlas of the Western Canada sedimentary basin: Calgary, Canadian Society of Petroleum Geologists and Alberta Research Council, p. 455-468.

NRG Associates, Inc., 1994, The significant oil and gas pools of Canada: Colorado Springs, Colo., NRG Associates, Inc. Database available from NRG Associates, Inc., P.O. Box 1655, Colorado Springs, CO 80901.

Riediger, C.L., 1997, Geochemistry of potential hydrocarbon source rocks of Triassic age in the Rocky Mountain Foothills of northeastern British Columbia and west central Alberta: Bulletin of Canadian Petroleum Geology, v. 45, no. 4, p.719-741.



Combined Triassic/Jurassic Gas Assessment Unit - 52430401

EXPLANATION

- Hydrography
- Shoreline
- 5243 — Geologic province code and boundary
- Country boundary
- Gas pool centerpoint
- Oil pool centerpoint
- 52430401 — Assessment unit code and boundary

Projection: Lambert. Standard parallels: 49 and 77. Central meridian: -92

SEVENTH APPROXIMATION
NEW MILLENNIUM WORLD PETROLEUM ASSESSMENT
DATA FORM FOR CONVENTIONAL ASSESSMENT UNITS

Date:……..	8/10/99		
Assessment Geologist:……..	M.E. Henry		
Region:……..	North America	Number:	5
Province:……..	Alberta Basin	Number:	5243
Priority or Boutique……	Priority		
Total Petroleum System:……	Combined Triassic/Jurassic	Number:	524304
Assessment Unit:……..	Combined Triassic/Jurassic Gas	Number:	52430401
* Notes from Assessor	Field sizes were not grown.		
	Assessing pools, not fields to conform to NRG data set.		

CHARACTERISTICS OF ASSESSMENT UNIT

Oil (<20,000 cfg/bo overall) **or** Gas (≥20,000 cfg/bo overall):… Gas

What is the minimum field size?……. 0.5 mmboe grown (≥1mmboe)
(the smallest field that has potential to be added to reserves in the next 30 years)

Number of discovered fields exceeding minimum size:…… Oil: 3 Gas: 174
Established (>13 fields) X Frontier (1-13 fields) Hypothetical (no fields)

Median size (grown) of discovered oil fields (mmboe):
1st 3rd NA 2nd 3rd NA 3rd 3rd NA
Median size (grown) of discovered gas fields (bcfg):
1st 3rd 10 2nd 3rd 9 3rd 3rd 11.5

Assessment-Unit Probabilities:

Attribute	Probability of occurrence (0-1.0)
1. **CHARGE:** Adequate petroleum charge for an undiscovered field ≥ minimum size……	1.0
2. **ROCKS:** Adequate reservoirs, traps, and seals for an undiscovered field ≥ minimum size……	1.0
3. **TIMING OF GEOLOGIC EVENTS:** Favorable timing for an undiscovered field ≥ minimum size	1.0

Assessment-Unit GEOLOGIC Probability (Product of 1, 2, and 3):…….. 1.0

4. **ACCESSIBILITY:** Adequate location to allow exploration for an undiscovered field ≥ minimum size…… 1.0

UNDISCOVERED FIELDS

Number of Undiscovered Fields: How many undiscovered fields exist that are ≥ minimum size?:
(uncertainty of fixed but unknown values)

Oil fields:……min. no. (>0)		median no.		max no.	
Gas fields:……min. no. (>0)	25	median no.	80	max no.	170

Size of Undiscovered Fields: What are the anticipated sizes (**grown**) of the above fields?:
(variations in the sizes of undiscovered fields)

Oil in oil fields (mmbo)……min. size		median size		max. size	
Gas in gas fields (bcfg):……min. size	3	median size	8	max. size	350

Assessment Unit (name, no.)
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AVERAGE RATIOS FOR UNDISCOVERED FIELDS, TO ASSESS COPRODUCTS

(uncertainty of fixed but unknown values)

Oil Fields:	minimum	median	maximum
Gas/oil ratio (cfg/bo)……			
NGL/gas ratio (bngl/mmcfg)……			

Gas fields:	minimum	median	maximum
Liquids/gas ratio (bngl/mmcfg)……	11	22	33
Oil/gas ratio (bo/mmcfg)……			

SELECTED ANCILLARY DATA FOR UNDISCOVERED FIELDS

(variations in the properties of undiscovered fields)

Oil Fields:	minimum	median	maximum
API gravity (degrees)……			
Sulfur content of oil (%)……			
Drilling Depth (m) ……			
Depth (m) of water (if applicable)……			

Gas Fields:	minimum	median	maximum
Inert gas content (%)……	0	0.5	10
CO_2 content (%)……	0	3	18
Hydrogen-sulfide content(%)……	0	2	51
Drilling Depth (m)……	700	2500	5000
Depth (m) of water (if applicable)……			

Assessment Unit (name, no.)
Combined Triassic/Jurassic Gas, 52430401

ALLOCATION OF UNDISCOVERED RESOURCES IN THE ASSESSMENT UNIT TO COUNTRIES OR OTHER LAND PARCELS (uncertainty of fixed but unknown values)

1. Canada represents 100 areal % of the total assessment unit

Oil in Oil Fields:	minimum	median	maximum
Richness factor (unitless multiplier):.....			
Volume % in parcel (areal % x richness factor):...			
Portion of volume % that is offshore (0-100%).....			

Gas in Gas Fields:	minimum	median	maximum
Richness factor (unitless multiplier):.....			
Volume % in parcel (areal % x richness factor):...		100	
Portion of volume % that is offshore (0-100%).....		0	

2. Province 5243 represents 60 areal % of the total assessment unit

Oil in Oil Fields:	minimum	median	maximum
Richness factor (unitless multiplier):.....			
Volume % in parcel (areal % x richness factor):...			
Portion of volume % that is offshore (0-100%).....			

Gas in Gas Fields:	minimum	median	maximum
Richness factor (unitless multiplier):.....			
Volume % in parcel (areal % x richness factor):...		25	
Portion of volume % that is offshore (0-100%).....		0	

3. Province 5245 represents 40 areal % of the total assessment unit

Oil in Oil Fields:	minimum	median	maximum
Richness factor (unitless multiplier):.....			
Volume % in parcel (areal % x richness factor):...			
Portion of volume % that is offshore (0-100%).....			

Gas in Gas Fields:	minimum	median	maximum
Richness factor (unitless multiplier):.....			
Volume % in parcel (areal % x richness factor):...		75	
Portion of volume % that is offshore (0-100%).....		0	

Combined Triassic/Jurassic Gas, AU 52430401
Undiscovered Field-Size Distribution