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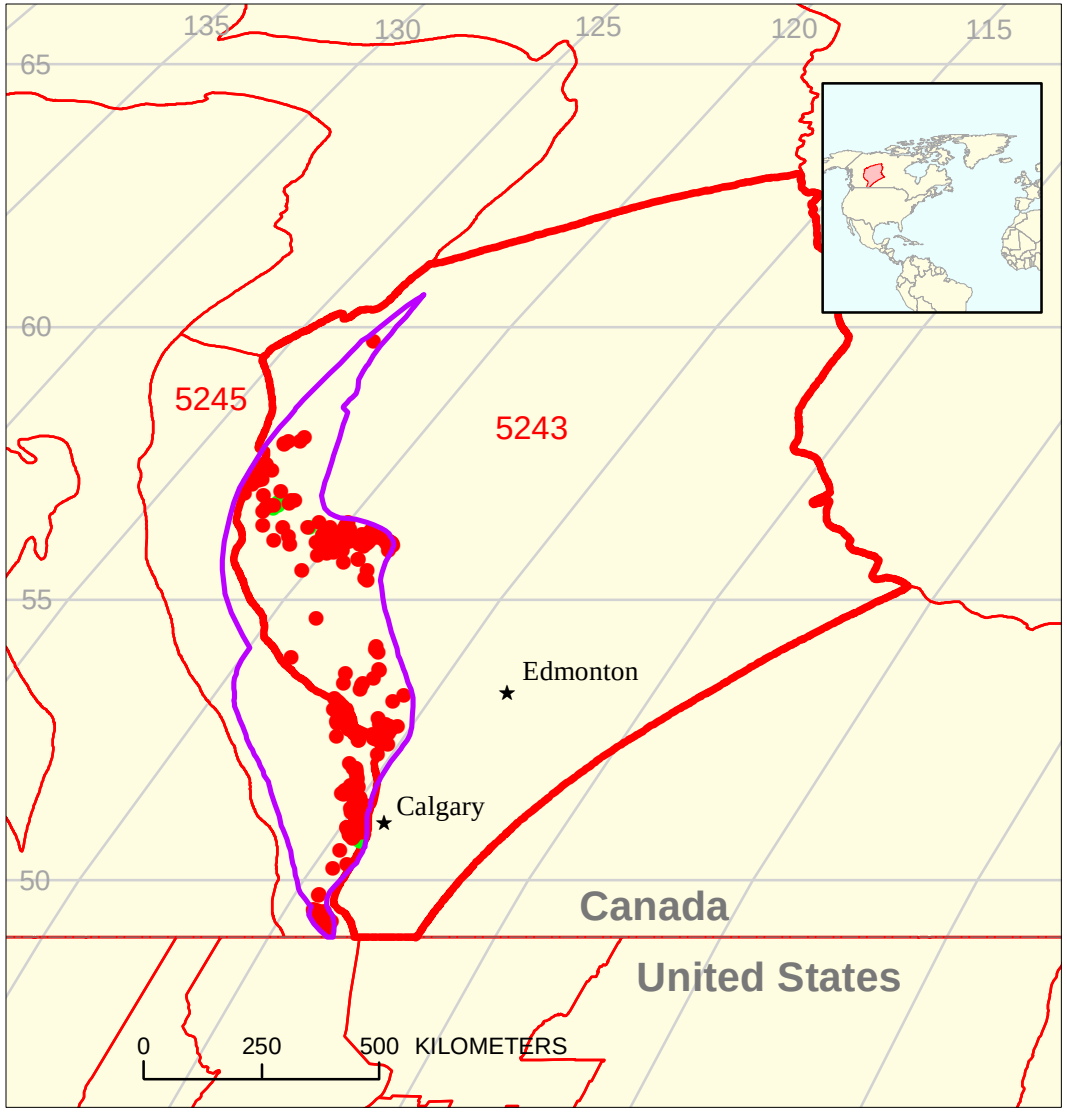
Exshaw-Rundle Gas Assessment Unit 52430301



Exshaw-Rundle Gas Assessment Unit 52430301
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: Exshaw-Rundle (524303)

ASSESSMENT UNIT: Exshaw-Rundle Gas (52430301)

DESCRIPTION: This gas assessment unit includes much of the deformed belt where thermally mature, organic-rich rocks of the Late Devonian to Early Mississippian Exshaw Formation are known or are likely to exist and western parts of the Alberta Basin in southwestern Alberta and northeast British Columbia. The boundary was drawn to enclose an area in which gas is expected to dominate future hydrocarbon discoveries.

SOURCE ROCKS: The principal source rock is the Late Devonian to Early Mississippian Exshaw Formation.

MATURATION: This unit lies entirely in the area where the Exshaw is known or expected to be mature or 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 lateral migration is not necessary.

RESERVOIR ROCKS: Carbonate reservoirs are about 2.5 times more numerous than sandstone reservoirs.

TRAPS AND SEALS: The most common trap types are structural followed by stratigraphic and combination in the approximate proportion of nine to one and one half to one, respectively. Seals result from diagenetic alteration of carbonate rocks, pinchout of reservoir quality rocks, or the presence of evaporites or shales.

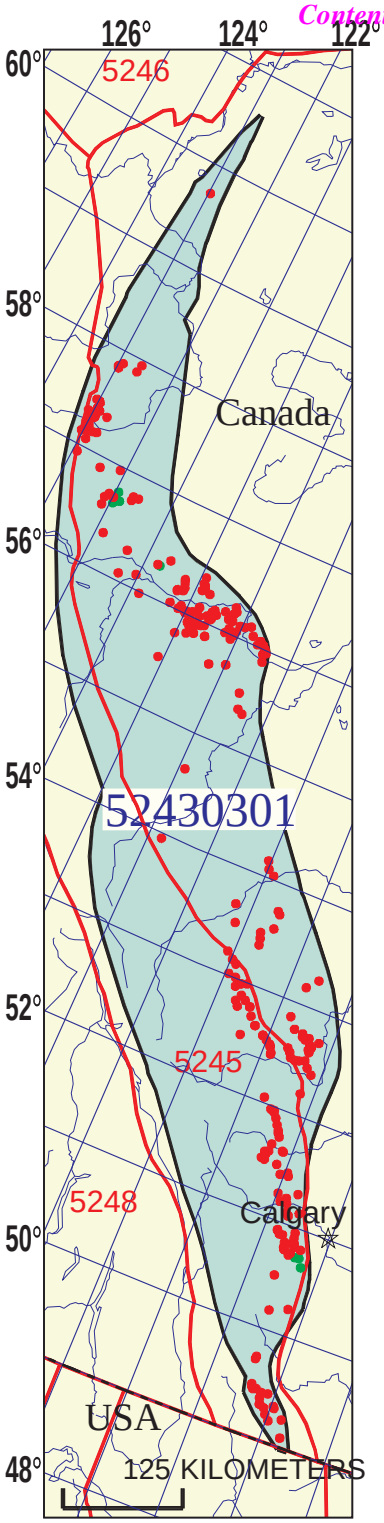
REFERENCES:

Allen, J., and Creaney, S., 1991, Oil families of the Western Canada Basin: Bulletin of Canadian Petroleum Geology, v. 39, no. 2, p. 107-122.

Creaney, S., and Allen, J., 1990, Hydrocarbon generation and migration in the Western Canada sedimentary basin, *in* Brooks, J., ed., Classic petroleum provinces: Geological Society of London Special Publication No. 50, p. 189-202.

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.



Exshaw-Rundle Gas
Assessment Unit - 52430301

EXPLANATION

- Hydrography
- Shoreline
- 5243 Geologic province code and boundary
- Country boundary
- Gas pool centerpoint
- Oil pool centerpoint
- 52430301 Assessment unit code and boundary

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

USGS science for a changing world

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:……	Exshaw-Rundle	Number:	524303
Assessment Unit:……	Exshaw-Rundle Gas	Number:	52430301
* 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: 5 Gas: 273
Established (>13 fields) X Frontier (1-13 fields) Hypothetical (no fields)

Median size (grown) of discovered oil fields (mmboe):
1st 3rd 13 2nd 3rd 7 3rd 3rd
Median size (grown) of discovered gas fields (bcfg):
1st 3rd 18 2nd 3rd 8 3rd 3rd 9

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)	20	median no.	100	max no.	250

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	750

Assessment Unit (name, no.)
Exshaw-Rundle Gas, 52430301

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)……	10	20	30
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	1	32
CO_2 content (%)……	0	2	14
Hydrogen-sulfide content(%)……	0	0.2	70
Drilling Depth (m)……	1000	2700	5000
Depth (m) of water (if applicable)……			

Assessment Unit (name, no.)
Exshaw-Rundle Gas, 52430301

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 50 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):…		70	
Portion of volume % that is offshore (0-100%)……		0	

3. Province 5245 represents 50 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):…		30	
Portion of volume % that is offshore (0-100%)……		0	

Exshaw-Rundle Gas, AU 52430301
Undiscovered Field-Size Distribution