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Yeoman Oil
Assessment Unit 52440101

Yeoman Oil Assessment Unit 52440101

Williston Basin, Canada Geologic Province 5244

Geologic Summary

Detailed map of this assessment unit

Assessment Input Data

Assessment Results

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

USGS PROVINCES: Williston Basin (5244) **GEOLOGIST:** M.E. Henry

TOTAL PETROLEUM SYSTEM: Yeoman (524401

ASSESSMENT UNIT: Yeoman Oil (52440101)

DESCRIPTION: This assessment unit covers a relatively small area in the south-central part of the Williston Basin province. It includes the southeastern corner of Saskatchewan, and a small part of southwestern Manitoba. The boundary was drawn to reflect the probable extent of effective evaporite seals. The southern boundary is the Canadian-United States International Boundary.

SOURCE ROCKS: The main source rocks for this system are upper Ordovician kukersites present in the Herald and Yeoman formations and other units.

MATURATION: Source rocks are mature for liquid hydrocarbon generation only in the southern part of the unit. Similar source rocks exist southward across the International Border into the United States.

MIGRATION: The relationship between the distribution of pools assigned to this unit and the extent of thermal maturity suggests limited lateral migration.

RESERVOIR ROCKS: Southward in the United States, where Ordovician production is better developed, virtually all reservoirs are found in dolomite.

TRAPS AND SEALS: In the United States, traps away from the Cedar Creek and Nesson Anticlines are described as resulting from gently draped folds associated with carbonate buildups. Seals for this assessment unit are expected to result from overlying anhydrite beds.

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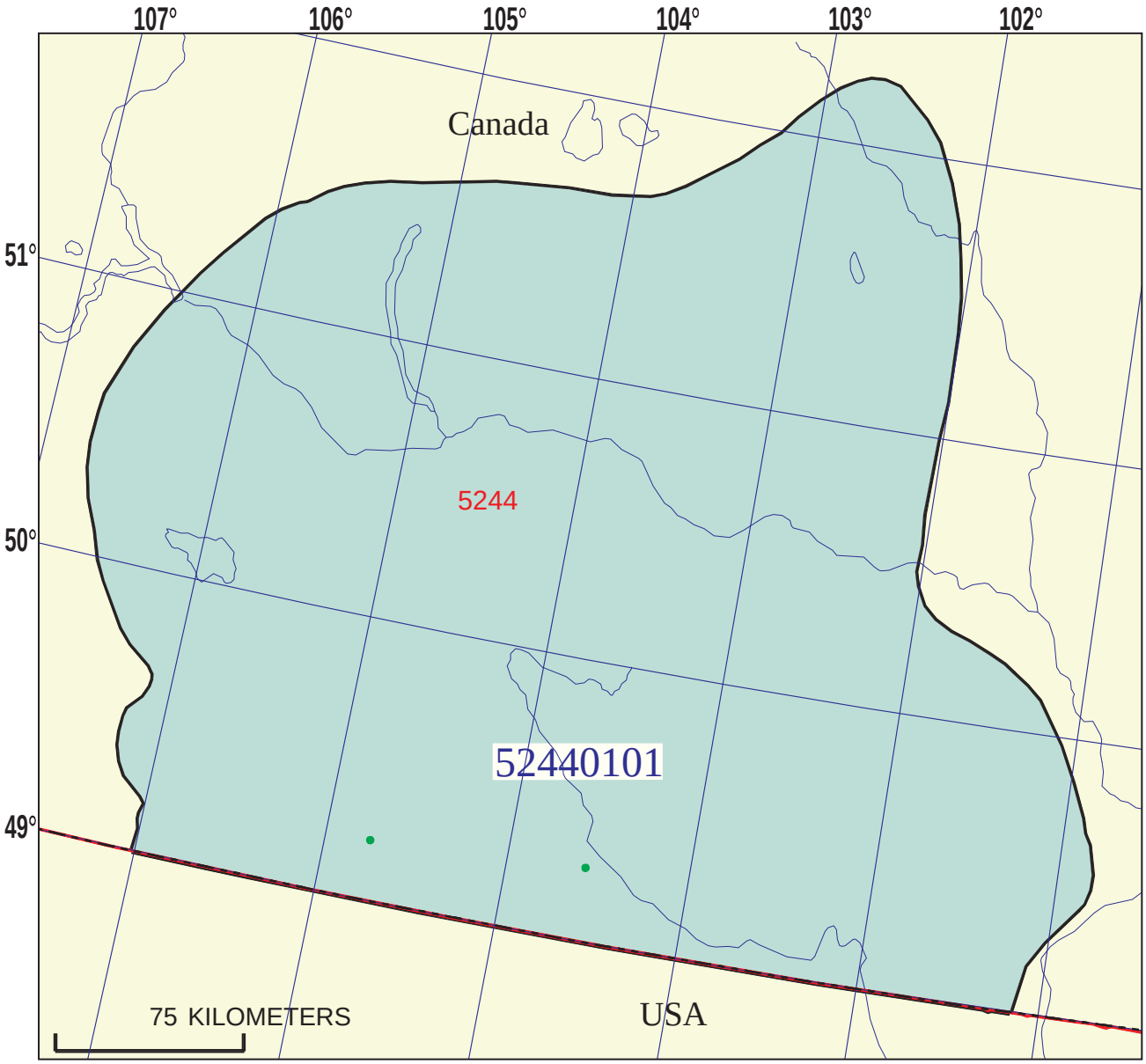
Creaney, S., Allen, J., Cole, K.S., Fowler, M.G., Brooks, P.W., Osadetz, K.G., Macqueen, R.W., Snowden, L.R., and Riediger, C.L., 1994, Petroleum generation and migration in the Western Canada sedimentary basin, *in* Mossop, G.D. and Shetsen, I., comps., Geological atlas of the Western Canada sedimentary 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.

Osadetz, K.G., Brooks, P.W., and Snowden, L.R., 1992, Oil families and their sources in Canadian Williston basin, (southeastern Saskatchewan and southwestern Manitoba): Bulletin of Canadian Petroleum Geology, v. 40, no. 3, p. 254-273.

Peterson, J.A., Williston basin province (031), *in* Gautier, D.L., Dolton, G.L., Takashi, K.I., and Varnes, K.L., Results, methodology, and supporting data for the 1995 National Assessment of United States oil and gas resources: U.S. Geological Survey Digital Data Series DDS-30.



Yeoman Oil
Assessment Unit - 52440101

EXPLANATION

- Hydrography
- Shoreline
- 5244 Geologic province code and boundary
- Country boundary
- Gas pool centerpoint
- Oil pool centerpoint
- 52440101 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:……..	10/19/99		
Assessment Geologist:……..	M.E. Henry		
Region:……..	North America	Number:	5
Province:……..	Williston Basin, Canada	Number:	5244
Priority or Boutique……	Priority		
Total Petroleum System:……	Yeoman	Number:	524401
Assessment Unit:……..	Yeoman Oil	Number:	52440101
* Notes from Assessor	No growth function applied. Only Canadian pools are considered.		

CHARACTERISTICS OF ASSESSMENT UNIT

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

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: 1 Gas: 0
Established (>13 fields) _____ Frontier (1-13 fields) X 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 NA 2nd 3rd NA 3rd 3rd NA

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)	1	median no.	4	max no.	10
Gas fields:……min. no. (>0)		median no.		max no.	

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	0.5	median size	1	max. size	10
Gas in gas fields (bcfg):……min. size		median size		max. size	

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)……	350	700	1050
NGL/gas ratio (bngl/mmcfg)……	30	60	90

Gas fields:	minimum	median	maximum
Liquids/gas ratio (bngl/mmcfg)……			
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)……	30	44	50
Sulfur content of oil (%)……			
Drilling Depth (m) ……	400	2400	3200
Depth (m) of water (if applicable)……			

Gas Fields:	minimum		maximum
Inert gas content (%)……			
CO_2 content (%)……			
Hydrogen-sulfide content (%)……			
Drilling Depth (m)……			
Depth (m) of water (if applicable)……			

Assessment Unit (name, no.)
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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):…		100	
Portion of volume % that is offshore (0-100%)……		0	

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

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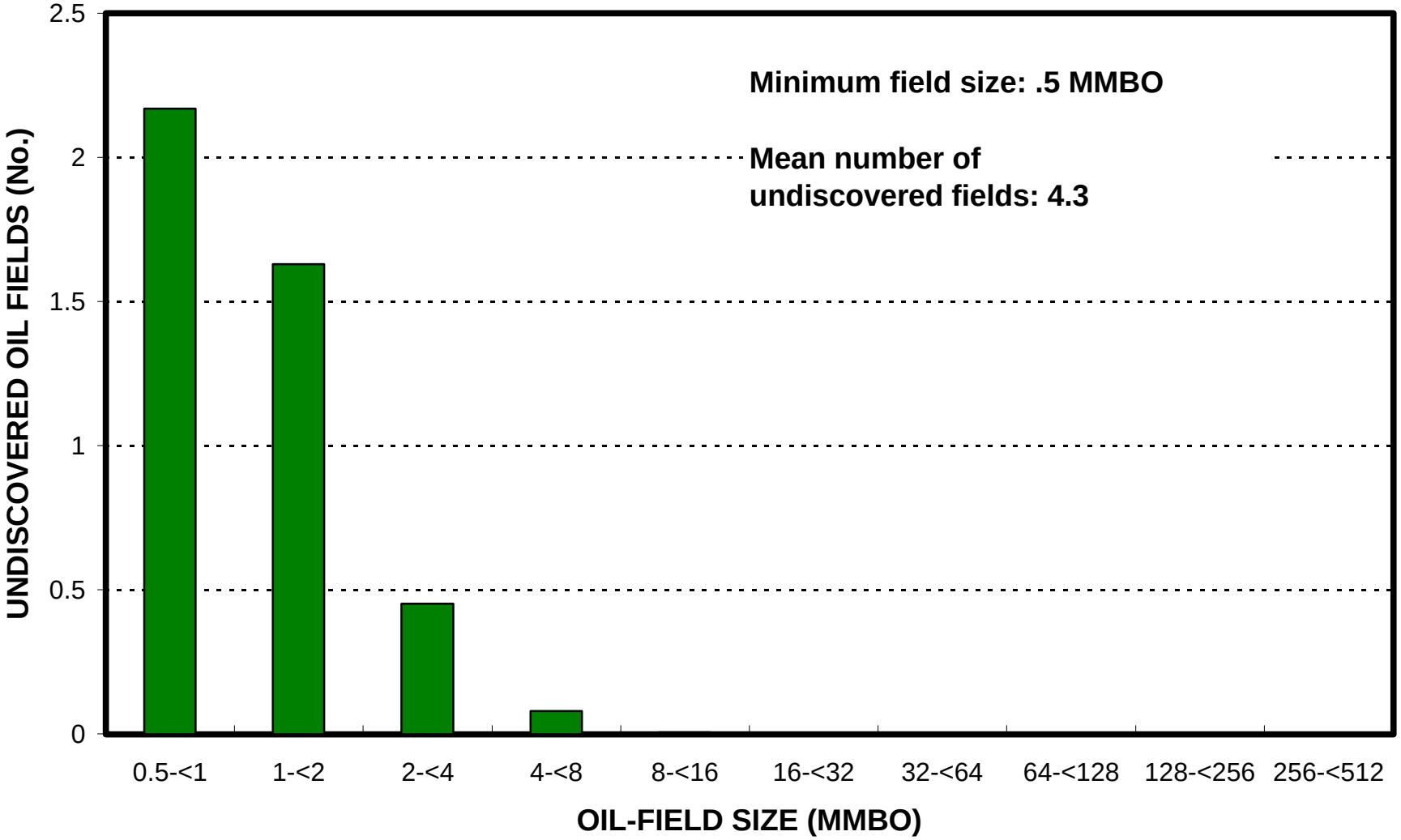
Undiscovered Field-Size Distribution



Lodgepole Oil, AU 52440401
Undiscovered Field-Size Distribution