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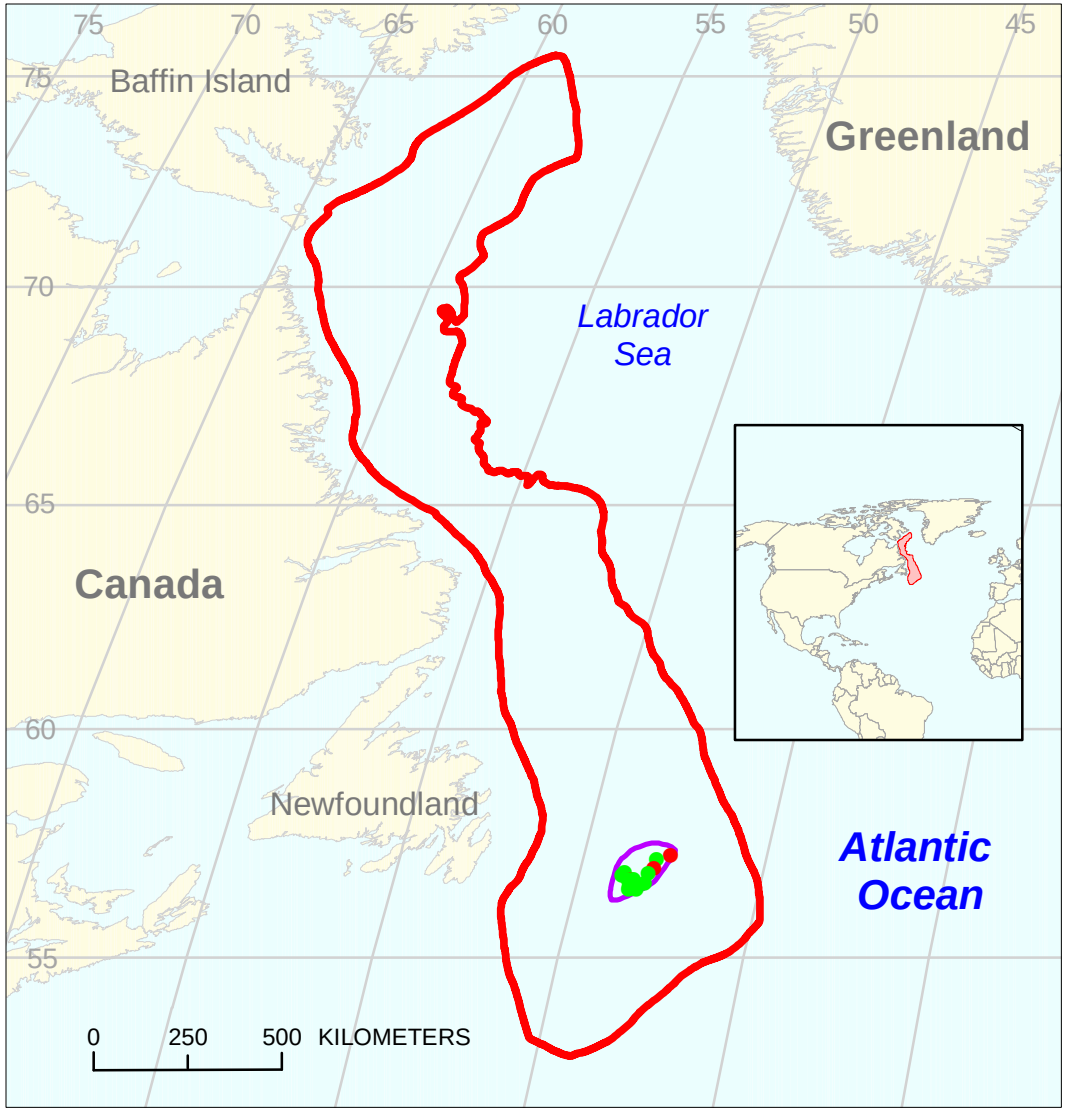
Jeanne d'Arc
Assessment Unit 52150101



Jeanne d'Arc Assessment Unit 52150101
Labrador-Newfoundland Shelf Geologic Province 5215

Geologic Summary

Detailed map of this assessment unit

Exploration/Discovery-History Data
- Plots of Known Field Sizes
- Plots of Grown Resources
- Tables

Assessment Input Data

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

USGS PROVINCE: Labrador-Newfoundland Shelf (5215) **GEOLOGIST:** L.B. Magoon III

TOTAL PETROLEUM SYSTEM: Egret-Hibernia (521501)

ASSESSMENT UNIT: Jeanne d'Arc (52150101)

DESCRIPTION: This assessment unit includes the entire area of the Egret-Hibernia total petroleum system. This area is commonly referred to as the Jeanne d'Arc basin.

SOURCE ROCK: The source rock is the Late Jurassic Egret Formation of Kimmeridgian age. This source rock is same age and depositionally related to the Kimmeridgian age source rock responsible for the large volumes of oil in the Central and Viking grabens in the North Sea.

MATURATION: The thermal maturity (0.6 percent Ro) of the source rock was sufficient to began in the Early Cretaceous and was depleted by the Late Cretaceous.

MIGRATION: The migration paths are relatively complex because petroleum migrated from a single active source rock, the Egret Formation, into the overlying Hibernia Formation, a siliclastic reservoir rock, first. Then, because the seal rocks were poor and of local extent, the oil and gas worked its way up into the shallower reservoir rocks.

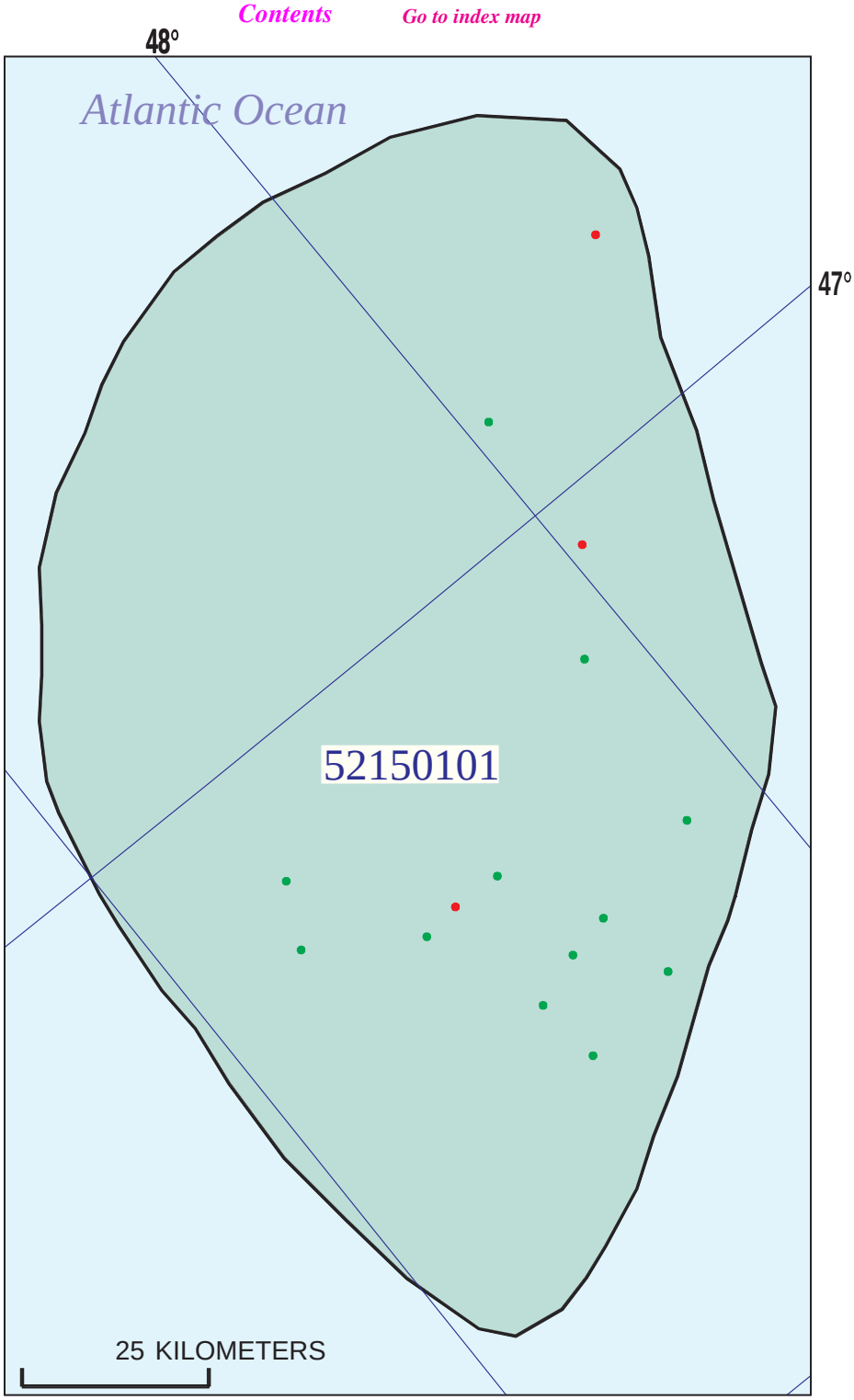
RESERVOIR ROCKS: Siliciclastic reservoir rocks of Late Jurassic and Cretaceous age were derived mostly from the craton on the west. The major sandstone reservoir rocks are the Upper Jurassic Rankin (Tempest) and Hibernia formations. The minor sandstone reservoir rocks include the Terra Nova, Otter Bay, Jeanne d'Arc, Hibernia, Ben Nevis and Avalon. Net reservoir thickness ranges from 3 to 36 m. Reservoir properties range from 9 to 33 percent porosity and 150 to 950 mD permeability.

TRAPS AND SEALS: Traps are fault blocks (6 traps), anticline (2), dome (2), faulted anticline (1), horst (1) and stratigraphic (1). Many of these traps formed during the Early Cretaceous because of salt movement and tectonic activity. The seal rocks are shales of local extent that occur between the reservoir rocks.

REFERENCES:

Sinclair, I.K., MacAlpine, K.D., Sherwin, D.F., and McMillan, N.J., 1992, Part 1–Geological framework, *in* Petroleum resources of the Jeanne d' Arc basin and environs, Grand Banks, Newfoundland: Geological Survey of Canada, Paper 92-8, p. 1-38.

Taylor, G.C., Best, M.E., Campbell, G.R., Hea, J.P., Henao, D., and Procter, R.M., 1992, Part II–Hydrocarbon potential, *in* Petroleum resources of the Jeanne d'Arc basin and environs, Grand Banks, Newfoundland: Geological Survey of Canada, Paper 92-8, p. 39-48.



Jeanne d`Arc
Assessment Unit - 52150101

EXPLANATION

- Hydrography
- Shoreline
- 5215 Geologic province code and boundary
- Country boundary
- Gas field centerpoint
- Oil field centerpoint
- 52150101 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:……..	6/30/99		
Assessment Geologist:……..	L.B. Magoon		
Region:……..	North America	Number:	5
Province:……..	Labrador-Newfoundland Shelf	Number:	5215
Priority or Boutique……..	Priority		
Total Petroleum System:……	Egret-Hibernia	Number:	521501
Assessment Unit:……..	Jeanne d'Arc	Number:	52150101
* Notes from Assessor	Lower 48 growth factor.		

CHARACTERISTICS OF ASSESSMENT UNIT

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

What is the minimum field size?……. 10 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: 12 Gas: 3

Established (>13 fields)	Frontier (1-13 fields)	Hypothetical (no fields)
	X	

Median size (grown) of discovered oil fields (mmboe):
1st 3rd 164 2nd 3rd 31.3 3rd 3rd

Median size (grown) of discovered gas fields (bcfg):
1st 3rd 130.4 2nd 3rd 707.7 3rd 3rd

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)	3	median no.	27	max no.	75
Gas fields:……min. no. (>0)	1	median no.	5	max no.	12

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	10	median size	40	max. size	750
Gas in gas fields (bcfg):……min. size	60	median size	200	max. size	1500

Assessment Unit (name, no.)
Jeanne d'Arc, 52150101

AVERAGE RATIOS FOR UNDISCOVERED FIELDS, TO ASSESS COPRODUCTS

(uncertainty of fixed but unknown values)

Oil Fields:	minimum	median	maximum
Gas/oil ratio (cfg/bo)……	2000	4000	8000
NGL/gas ratio (bngl/mmcfg)……	30	60	90

Gas fields:	minimum	median	maximum
Liquids/gas ratio (bngl/mmcfg)……	22	44	66
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)……	15	35	50
Sulfur content of oil (%)……	0.01	0.1	0.5
Drilling Depth (m) ……	2000	4000	5500
Depth (m) of water (if applicable)……	400	500	600

Gas Fields:	minimum	median	maximum
Inert gas content (%)……			
CO_2 content (%)……			
Hydrogen-sulfide content (%)……			
Drilling Depth (m)……	2000	4000	6000
Depth (m) of water (if applicable)……	400	500	600

Assessment Unit (name, no.)
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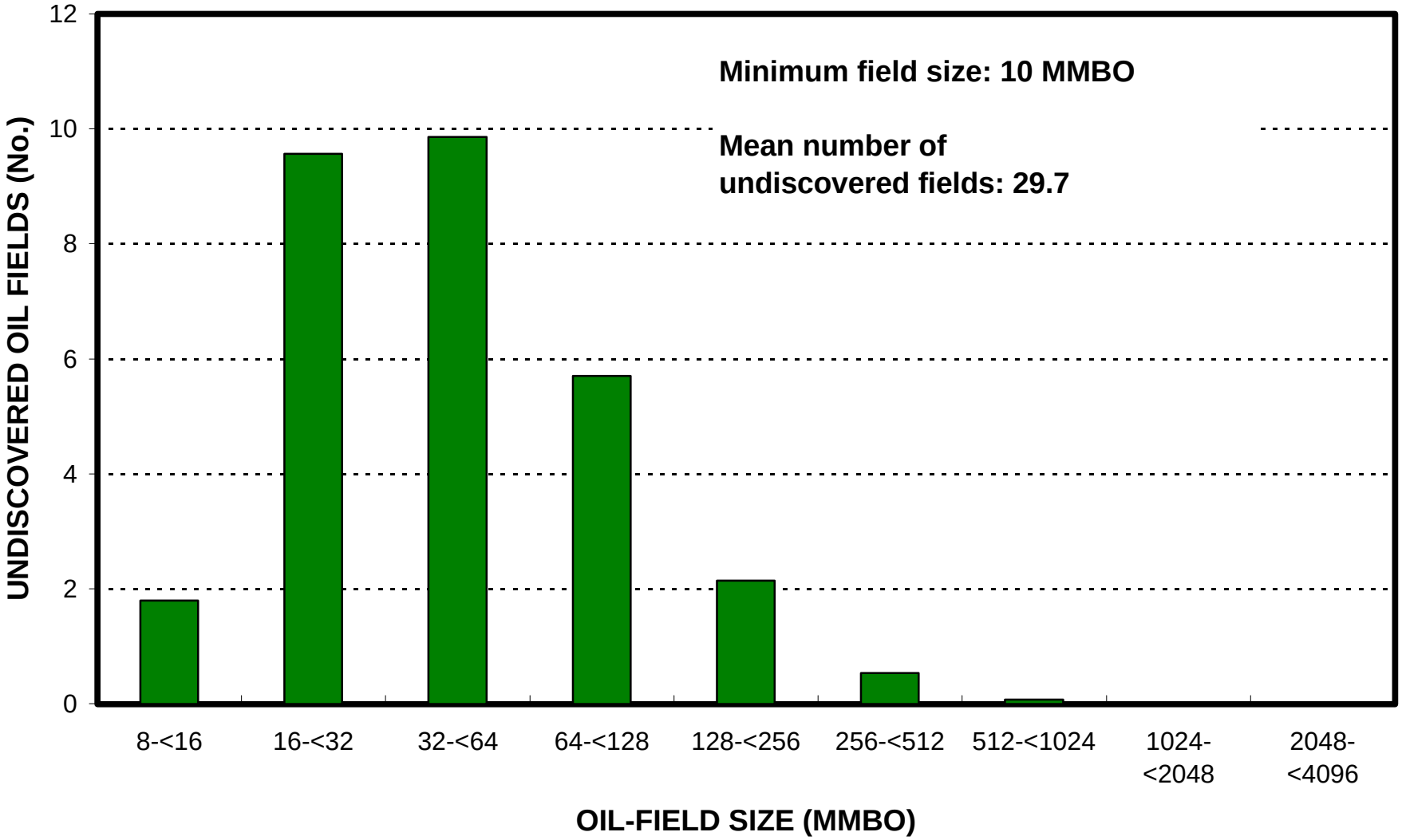
ALLOCATION OF UNDISCOVERED RESOURCES IN THE ASSESSMENT UNIT TO COUNTRIES OR OTHER LAND PARCELS (uncertainty of fixed but unknown values)

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%)……		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%)……		100	

Jeanne d'Arc, AU 52150101
Undiscovered Field-Size Distribution



Jeanne d'Arc, AU 52150101
Undiscovered Field-Size Distribution