

Onshore and Offshore Northeastern Shelf Assessment Unit 13220101



-  Onshore and Offshore Northeastern Shelf Assessment Unit 13220101
-  North Sakhalin Basin Geologic Province 1322

USGS PROVINCE: North Sakhalin Basin (1322)

GEOLOGIST: S.J. Lindquist

TOTAL PETROLEUM SYSTEM: North Sakhalin Neogene (132201)

ASSESSMENT UNIT: Onshore and Offshore Northeastern Shelf (13220101)

DESCRIPTION: This assessment unit encompasses the entire province, approximately 84,000 sq km. It contains a deep (as much as 8 km) Neogene basin, which formed over Cretaceous to Paleogene deformed and metamorphosed rocks of a complex continental suture. The largest northeastern part of the basin containing most of the known hydrocarbon reserves was filled with siliciclastic sediments of the pre-Quaternary Amur River delta. The basin experienced significant and complex structural deformation, which culminated in latest Pliocene to early Quaternary time.

SOURCE ROCKS: Primary source rocks are Upper Oligocene (?) to Lower Miocene deep-marine, diatomaceous, oil-prone shales. Other possible source rocks include Lower to Middle Miocene deltaic alluvial and prodeltaic marine, more gas-prone, coaly shales and some coals.

MATURATION: Middle to Late Miocene maturation at depths of 2.5 to 4 km.

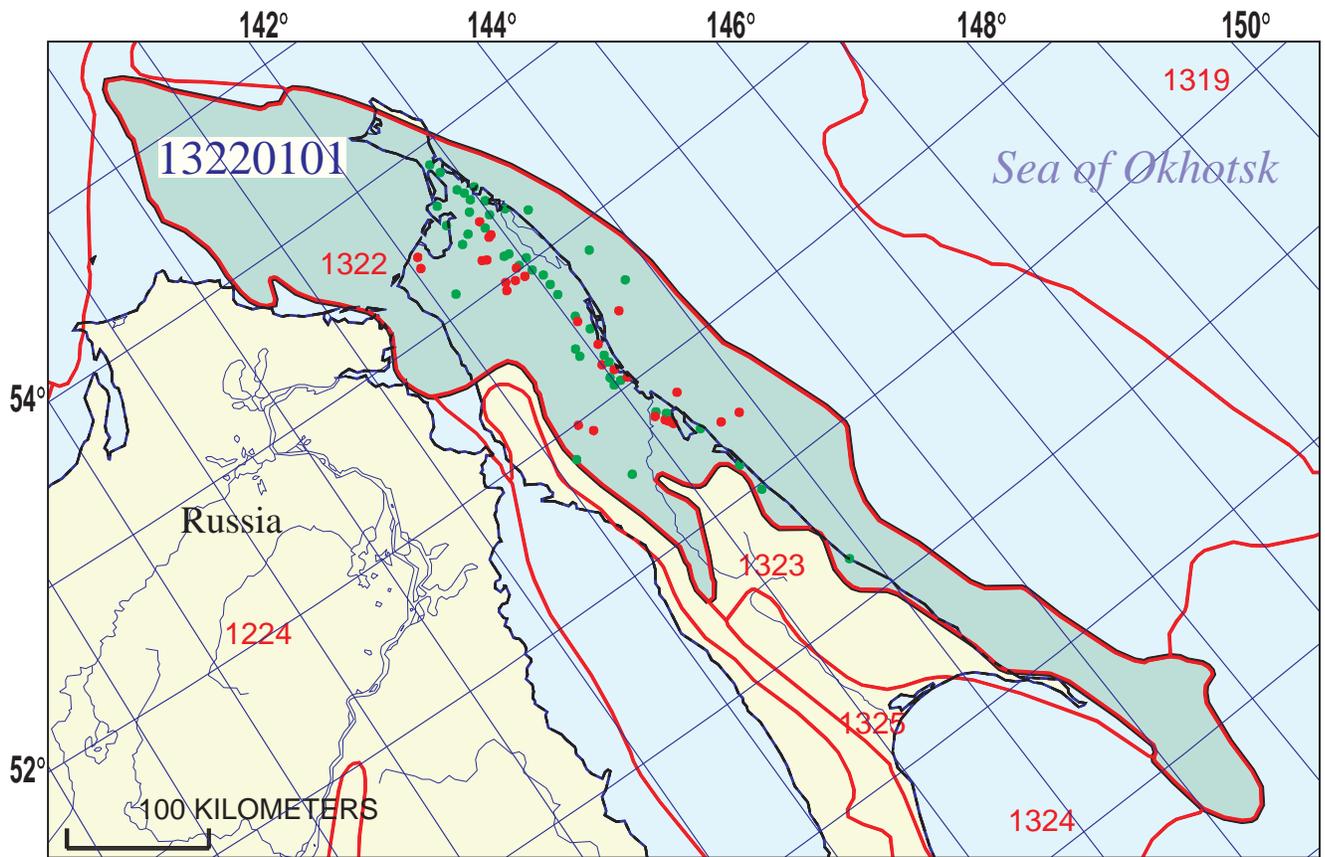
MIGRATION: Mainly vertical migration along faults.

RESERVOIR ROCKS: Dominantly Middle Miocene to Pliocene continental to marine sandstones. Also self-sourced Upper Oligocene to Lower Miocene fractured siliceous deposits comparable to the Monterey Formation reservoirs of California.

TRAPS AND SEALS: Anticlines and fault traps with significant stratigraphic potential. Excellent regional and local seals are Miocene shales typically tens of meters in thickness.

REFERENCES:

- Gololobov, Y.N., 1982, Cyclicality of Cenozoic oil-and-gas deposits of northern Sakhalin: *Soviet Geology and Geophysics*, v. 23, no. 7, p. 25-30 (in English).
- Tull, S.J., 1997, The diversity of hydrocarbon habitat in Russia: *Petroleum Geoscience*, v. 3, p. 315-325.
- Worrall, D.M., Kruglyak, V., Kunst, F., and Kuznetsov, V., 1996, Tertiary tectonics of the Sea of Okhotsk, Russia—far-field effects of the India-Eurasia collision: *Tectonics*, v. 15, no. 4, p. 813-826.



Onshore and Offshore Northeastern Shelf Assessment Unit - 13220101

EXPLANATION

- Hydrography
- Shoreline
- 1322 — Geologic province code and boundary
- Country boundary
- Gas field centerpoint
- Oil field centerpoint
- 13220101 — Assessment unit code and boundary

Projection: Equidistant Conic. Central meridian: 100. Standard Parallel: 58 30

AVERAGE RATIOS FOR UNDISCOVERED FIELDS, TO ASSESS COPRODUCTS
 (uncertainty of fixed but unknown values)

<u>Oil Fields:</u>	minimum	median	maximum
Gas/oil ratio (cfg/bo).....	<u>3500</u>	<u>5000</u>	<u>6500</u>
NGL/gas ratio (bnl/mmcf).....	<u>30</u>	<u>60</u>	<u>90</u>
<u>Gas fields:</u>	minimum	median	maximum
Liquids/gas ratio (bnl/mmcf).....	<u>30</u>	<u>50</u>	<u>70</u>
Oil/gas ratio (bo/mmcf).....	<u> </u>	<u> </u>	<u> </u>

SELECTED ANCILLARY DATA FOR UNDISCOVERED FIELDS
 (variations in the properties of undiscovered fields)

<u>Oil Fields:</u>	minimum	median	maximum
API gravity (degrees).....	<u>25</u>	<u>33</u>	<u>50</u>
Sulfur content of oil (%).....	<u>0</u>	<u>0.1</u>	<u>1</u>
Drilling Depth (m)	<u>1500</u>	<u>3000</u>	<u>5000</u>
Depth (m) of water (if applicable).....	<u>0</u>	<u>70</u>	<u>180</u>
<u>Gas Fields:</u>	minimum	median	maximum
Inert gas content (%).....	<u>1</u>	<u>3</u>	<u>5</u>
CO ₂ content (%).....	<u>0.2</u>	<u>1.5</u>	<u>5</u>
Hydrogen-sulfide content (%).....	<u>0</u>	<u>0</u>	<u>0</u>
Drilling Depth (m).....	<u>1000</u>	<u>3000</u>	<u>5500</u>
Depth (m) of water (if applicable).....	<u>0</u>	<u>70</u>	<u>180</u>

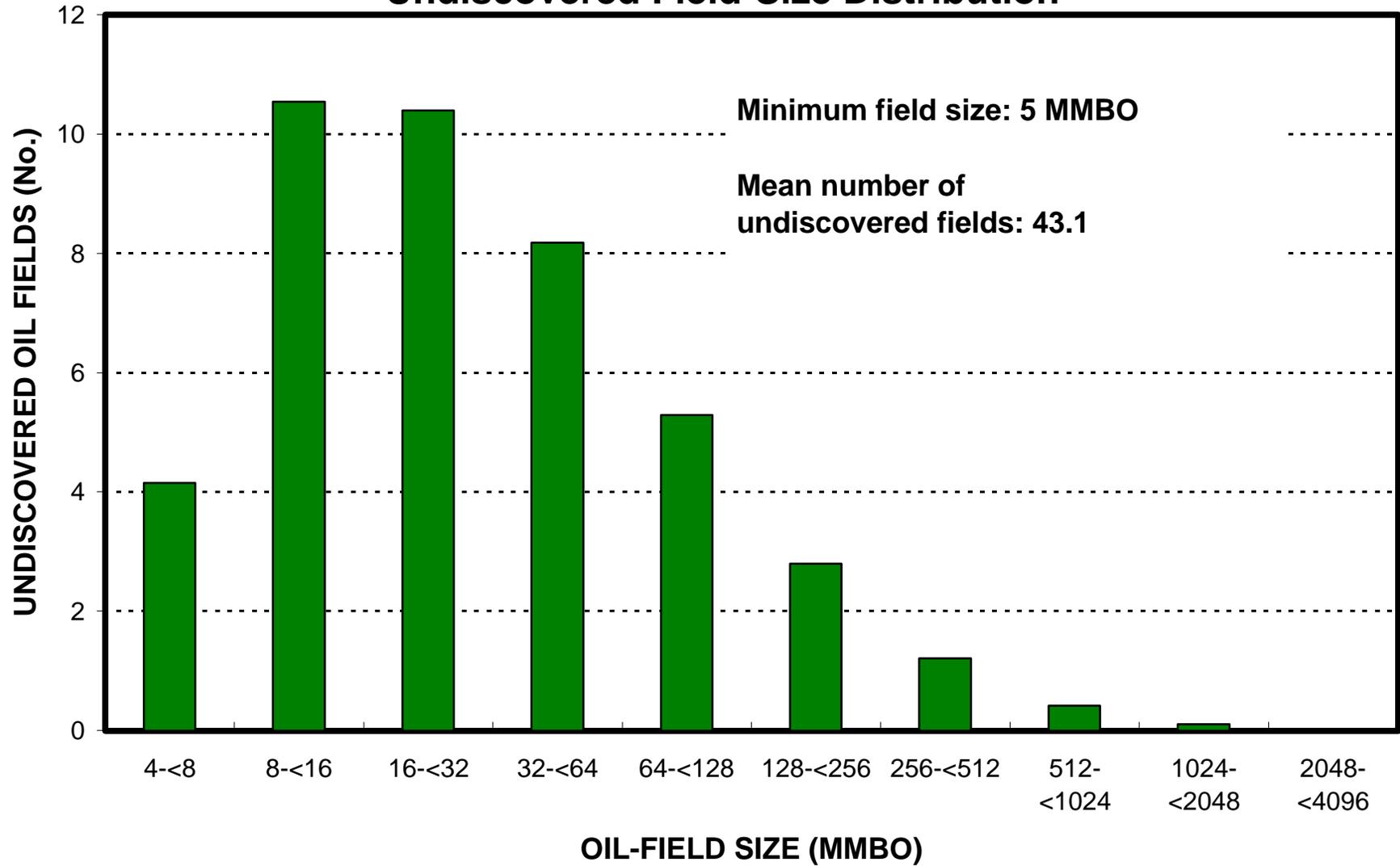
**ALLOCATION OF UNDISCOVERED RESOURCES IN THE ASSESSMENT UNIT
 TO COUNTRIES OR OTHER LAND PARCELS** (uncertainty of fixed but unknown values)

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

<u>Oil in Oil Fields:</u>	minimum	median	maximum
Richness factor (unitless multiplier):.....	_____	_____	_____
Volume % in parcel (areal % x richness factor):...	_____	100	_____
Portion of volume % that is offshore (0-100%):.....	_____	93	_____
 <u>Gas in Gas Fields:</u>	 minimum	 median	 maximum
Richness factor (unitless multiplier):.....	_____	_____	_____
Volume % in parcel (areal % x richness factor):...	_____	100	_____
Portion of volume % that is offshore (0-100%):.....	_____	95	_____

Onshore and Offshore Northeastern Shelf, AU 13220101

Undiscovered Field-Size Distribution



Onshore and Offshore Northeastern Shelf, AU 13220101

Undiscovered Field-Size Distribution

