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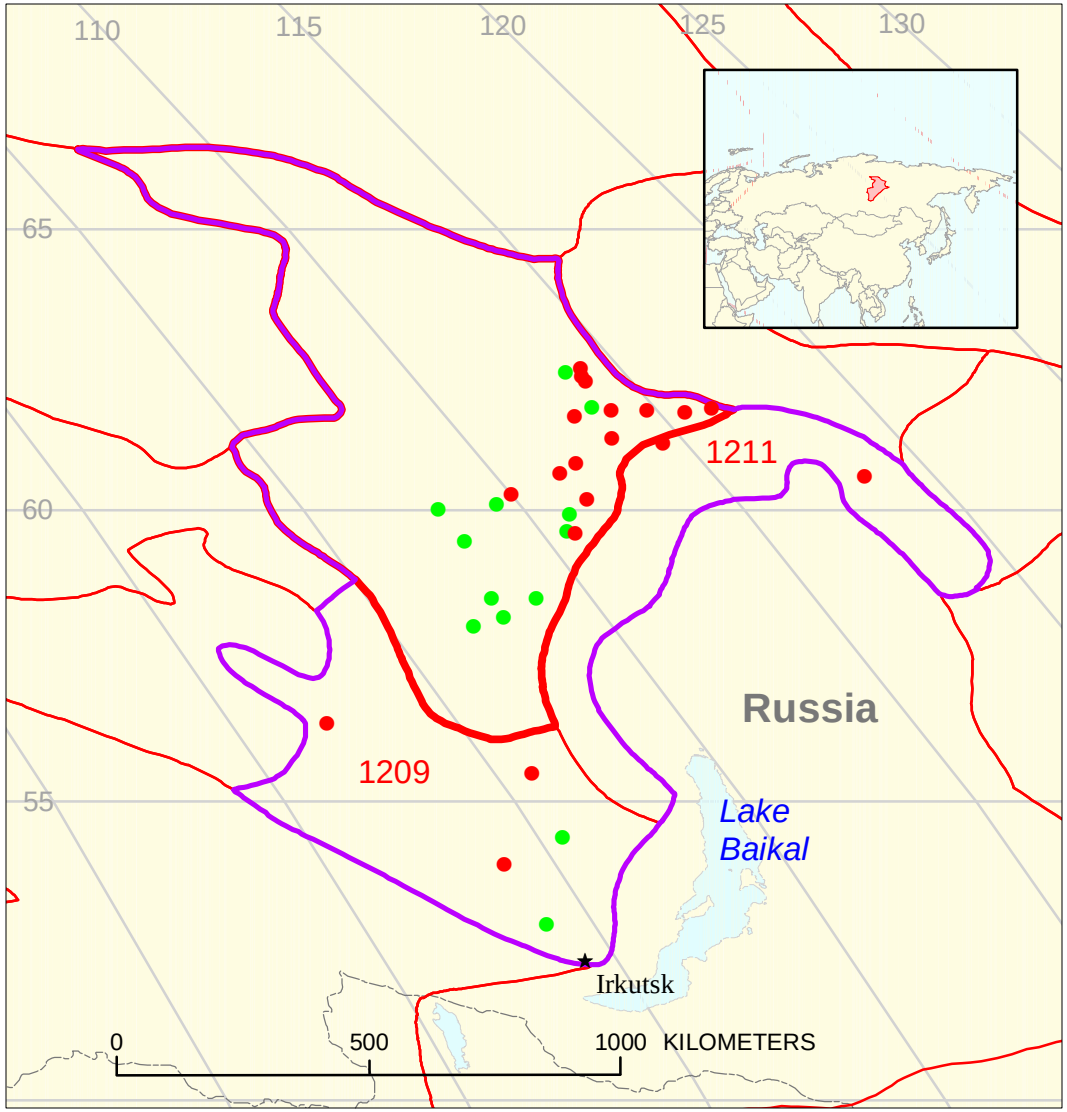
Baikal-Patom Foldbelt Riphean-Craton Margin Vendian Assessment Unit 12100101



Baikal-Patom Foldbelt Riphean-Craton Margin Vendian Assessment Unit 12100101

Nepa-Botuoba Arch Geologic Province 1210

Other geologic province boundary

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: Nepa-Botuoba Arch (1210), Angara-Lena Terrace (1209), and Cis-Patom Foredeep (1211)

GEOLOGIST: G.F. Ulmishek

TOTAL PETROLEUM SYSTEM: Baikal-Patom Foldbelt Riphean-Craton Margin Vendian (121001)

ASSESSMENT UNIT: Same as petroleum system (12100101)

DESCRIPTION: Assessment unit encompasses all three structural provinces, two of which are boutiques (1209 and 1211). All provinces are located on the southeastern Siberian craton adjacent to the Baikal-Patom foldbelt.

SOURCE ROCKS: Source rocks are absent from the provinces. Supposedly, hydrocarbons migrated from presently metamorphosed Riphean source rocks of the Baikal-Patom foldbelt (Kalanchev and Tinnov Formations).

MATURATION: Source rocks had reached maturity before they were deformed and metamorphosed in Devonian(?) time.

MIGRATION: Time of migration is restrained by deposition of the salt seal in the Early Cambrian and metamorphism of source rocks in the Devonian.

RESERVOIR ROCKS: Reservoir rocks are lower Vendian sandstones and upper Vendian to lowermost Cambrian dolomites.

TRAPS: The main traps are basement-related faulted local uplifts. Lower Cambrian reefs and diagenetic traps are of secondary importance.

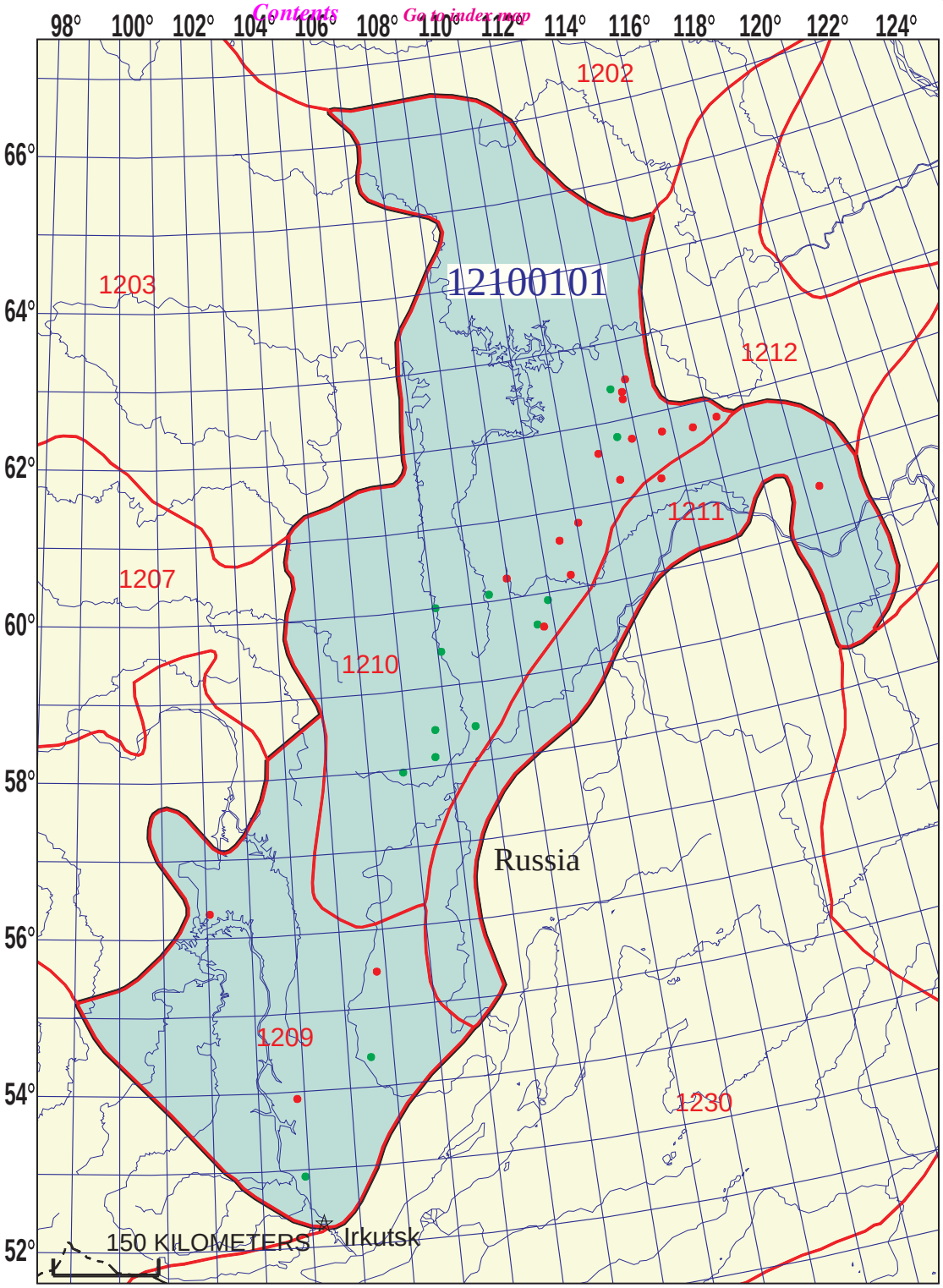
SEALS: The principal seal is the thick Lower Cambrian salt formation although commonly pools are directly sealed by impermeable carbonate and siliciclastic beds.

REFERENCES:

Dmitrievsky, A.N., Samsonov, Yu.V., Vagin, S.B., Ilyukhin, L.N., Miller, S.A., and Fomicheva, L.N., 1989, Historical-genetic assessment of oil and gas generation and accumulation in sedimentary basins of the Siberian platform (Istoriko-geneticheskaya otsenka neftegazoobrazovaniya i neftegazonakopleniya v osadochnykh basseynakh Sibirskoy platformy): Moscow, Nedra, 220 p.

Kontorovich, A.E., Surkov, V.S., and Trofimuk, A.A., eds., 1981, Oil and gas geology of the Siberian craton (Geologiya nefti i gaza Sibirskoy platformy): Moscow, Nedra, 552 p.

Sokolov, B.A., ed., 1989, Geological and geochemical conditions of formation of oil and gas fields in ancient rocks of East Siberia (Geologo-geokhimicheskie usloviya formirovaniya neftegazovykh mestorozhdeniy v drevnikh tolshchakh vostochnoy Sibiri): Moscow, Moscow State University, 192 p.



Baikal-Patom Foldbelt Riphean-Craton Margin Vendian Assessment Unit - 12100101

EXPLANATION

- Hydrography
- Shoreline
- 1210 — Geologic province code and boundary
- Country boundary
- Gas field centerpoint
- Oil field centerpoint
- 12100101 — Assessment unit code and boundary

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

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

Date:……..	3/31/99		
Assessment Geologist:……..	G.F. Ulmishek		
Region:……..	Former Soviet Union	Number:	1
Province:……..	Nepa-Botuoba Arch	Number:	1210
Priority or Boutique……	Priority		
Total Petroleum System:……	Baikal-Patom Foldbelt Riphean-Craton Margin Vendian	Number:	121001
Assessment Unit:……	Baikal-Patom Foldbelt Riphean-Craton Margin Vendian	Number:	12100101
* Notes from Assessor	Combined Provinces 1209 (Boutique), 1210, and 1211 (Boutique).		
	No growth factor used.		

CHARACTERISTICS OF ASSESSMENT UNIT

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

What is the minimum field size?……. 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: 4 Gas: 12
Established (>13 fields) X Frontier (1-13 fields) _____ Hypothetical (no fields) _____

Median size (grown) of discovered oil fields (mmboe):
1st 3rd 95 2nd 3rd 825 3rd 3rd _____
Median size (grown) of discovered gas fields (bcfg):
1st 3rd 1050 2nd 3rd 100 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)	4	median no.	24	max no.	60
Gas fields:……min. no. (>0)	20	median no.	120	max no.	200

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	5	median size	25	max. size	2000
Gas in gas fields (bcfg):……min. size	30	median size	120	max. size	12000

Assessment Unit (name, no.)
Baikal-Patom Foldbelt Riphean-Craton Margin Vendian, 12100101

AVERAGE RATIOS FOR UNDISCOVERED FIELDS, TO ASSESS COPRODUCTS

(uncertainty of fixed but unknown values)

Oil Fields:	minimum	median	maximum
Gas/oil ratio (cfg/bo)……	2500	5000	7500
NGL/gas ratio (bngl/mmcfg)……	30	60	90

Gas fields:	minimum	median	maximum
Liquids/gas ratio (bngl/mmcfg)……	25	45	65
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	40	50
Sulfur content of oil (%)……	0	0.1	0.3
Drilling Depth (m) ……	1200	2200	3500
Depth (m) of water (if applicable)……			

Gas Fields:	minimum	median	maximum
Inert gas content (%)……	2	5	10
CO_2 content (%)……	0.1	0.2	0.4
Hydrogen-sulfide content (%)……	0	0	0
Drilling Depth (m)……	1200	2200	4200
Depth (m) of water (if applicable)……			

Assessment Unit (name, no.)
Baikal-Patom Foldbelt Riphean-Craton Margin Vendian, 12100101

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

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):...		100	
Portion of volume % that is offshore (0-100%).....		0	

2. Province 1210 represents 54 areal % of the total assessment unit

Oil in Oil 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	

Gas in Gas Fields:	minimum	median	maximum
Richness factor (unitless multiplier):.....			
Volume % in parcel (areal % x richness factor):...		63	
Portion of volume % that is offshore (0-100%).....		0	

3. Province 1209 represents 28 areal % of the total assessment unit

Oil in Oil Fields:	minimum	median	maximum
Richness factor (unitless multiplier):.....			
Volume % in parcel (areal % x richness factor):...		15	
Portion of volume % that is offshore (0-100%).....		0	

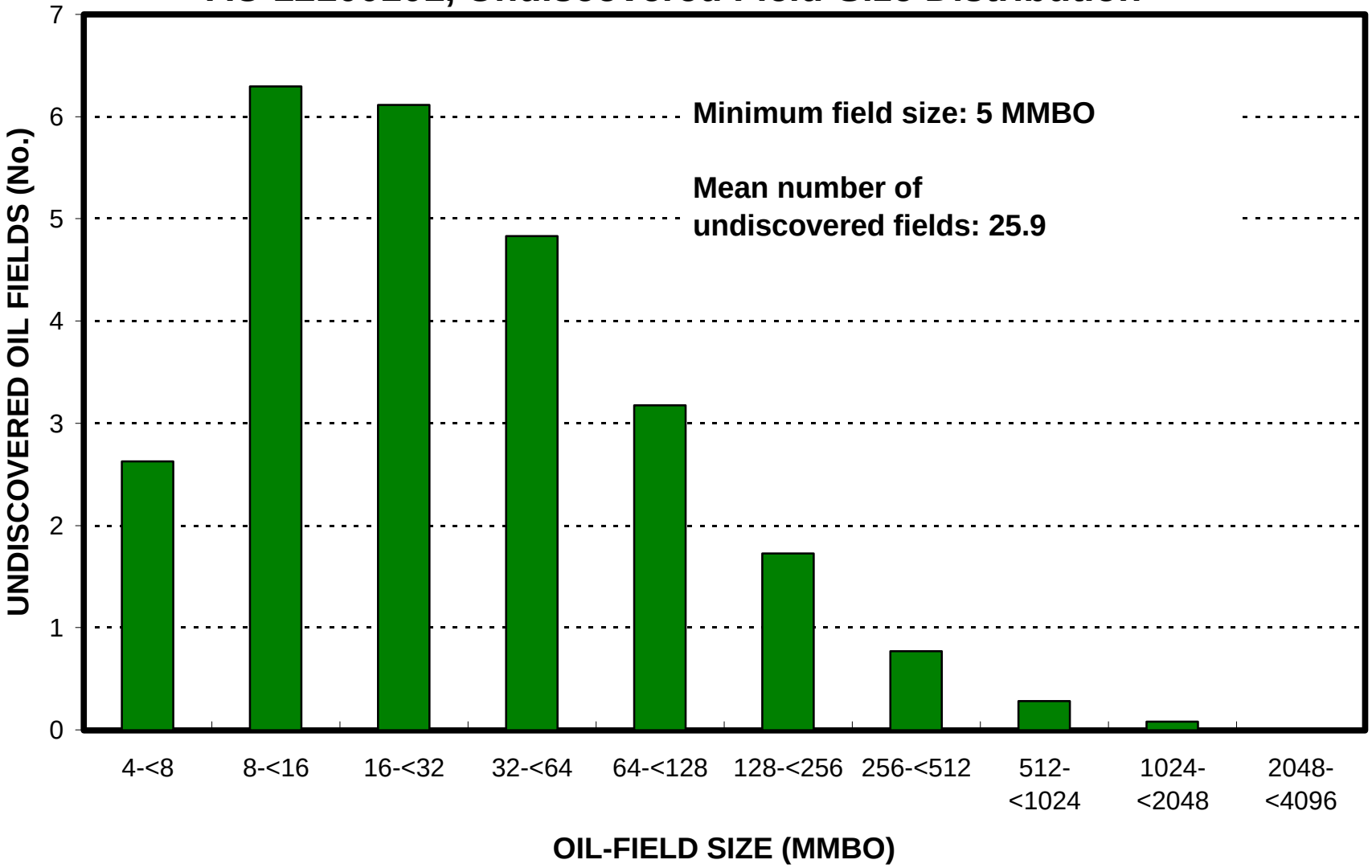
Gas in Gas Fields:	minimum	median	maximum
Richness factor (unitless multiplier):.....			
Volume % in parcel (areal % x richness factor):...		25	
Portion of volume % that is offshore (0-100%).....		0	

4. Province 1211 represents 18 areal % of the total assessment unit

Oil in Oil Fields:	minimum	median	maximum
Richness factor (unitless multiplier):.....			
Volume % in parcel (areal % x richness factor):...		10	
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):...		12	
Portion of volume % that is offshore (0-100%).....		0	

Baikal-Patom Foldbelt Riphean-Craton Margin Vendian, AU 12100101, Undiscovered Field-Size Distribution



Baikal-Patom Foldbelt Riphean-Craton Margin Vendian, AU 12100101, Undiscovered Field-Size Distribution