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South Kara Sea Offshore
Assessment Unit 11740302

South Kara Sea Offshore Assessment Unit 11740302

West Siberian Basin Geologic Province 1174

Geologic Summary

Detailed map of this assessment unit

Assessment Input Data

Assessment Results

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

USGS PROVINCE: West Siberian Basin (1174) **GEOLOGIST:** G.F. Ulmishek

PETROLEUM SYSTEM: Northern West Siberian Mesozoic Composite (117403)

ASSESSMENT UNIT: South Kara Sea Offshore (11740302)

DESCRIPTION: The assessment unit includes the unexplored offshore portion of the petroleum system. The offshore geology is significantly a continuation of that onshore and the main characteristics of hydrocarbon productivity are expected to be similar. However, the unit is expected to have a different field-size distribution of undiscovered resources because of very low exploration maturity.

SOURCE ROCKS: Genesis of gas in northern West Siberia is poorly understood. Upper dry gas could have been sourced by low-maturity coaly shales and coals in the lower part of the Pokur Formation, but deeper sources are also possible. Models of migration and accumulation of the gas are poorly constrained. Source rocks for wet gas and oil in Neocomian and older rocks are probably Neocomian coals and marine Jurassic shales including the Volgian-lower Berriasian Bazhenov Formation.

MATURATION: Jurassic rocks are presently in the gas window zone. The lower Pokur Formation is at the early maturity stage (Ro 0.6 to 0.7 percent) in nearshore areas and probably immature toward basin margins. Maximum maturation was reached in Late Cretaceous-Eocene time.

RESERVOIR ROCKS: The principal reserves of dry gas are expected in sandstones of the upper Albian-Cenomanian Pokur Formation. Reservoir properties of the sandstones are similar to those onshore, porosity is 25 to 35 percent, permeability is 1 darcy and more. The Pokur Formation is exposed on sea bottom on the basin margins and potential there is related to Neocomian and older sandstones.

TRAPS: Dominance of structural traps in undiscovered fields is expected.

SEALS: Gas accumulations in the Pokur Formation are sealed by thick (150 to 600 m) marine siliceous shales of the Turonian-Coniacian Kuznetsov Formation. The seal becomes sandier in eastern areas and the prospectivity of the Pokur Formation there is questionable. The regional seal for Neocomian reservoirs is composed of lower Albian shales.

REFERENCES:

Cramer, B., Poelchau, H.S., Gerling, P., Lopatin, N.V., and Litke, R., 1999, Methane released from groundwater: the source of natural gas accumulations in northern West Siberia: Marine and Petroleum Geology, v. 16, no.3, p. 225-244.

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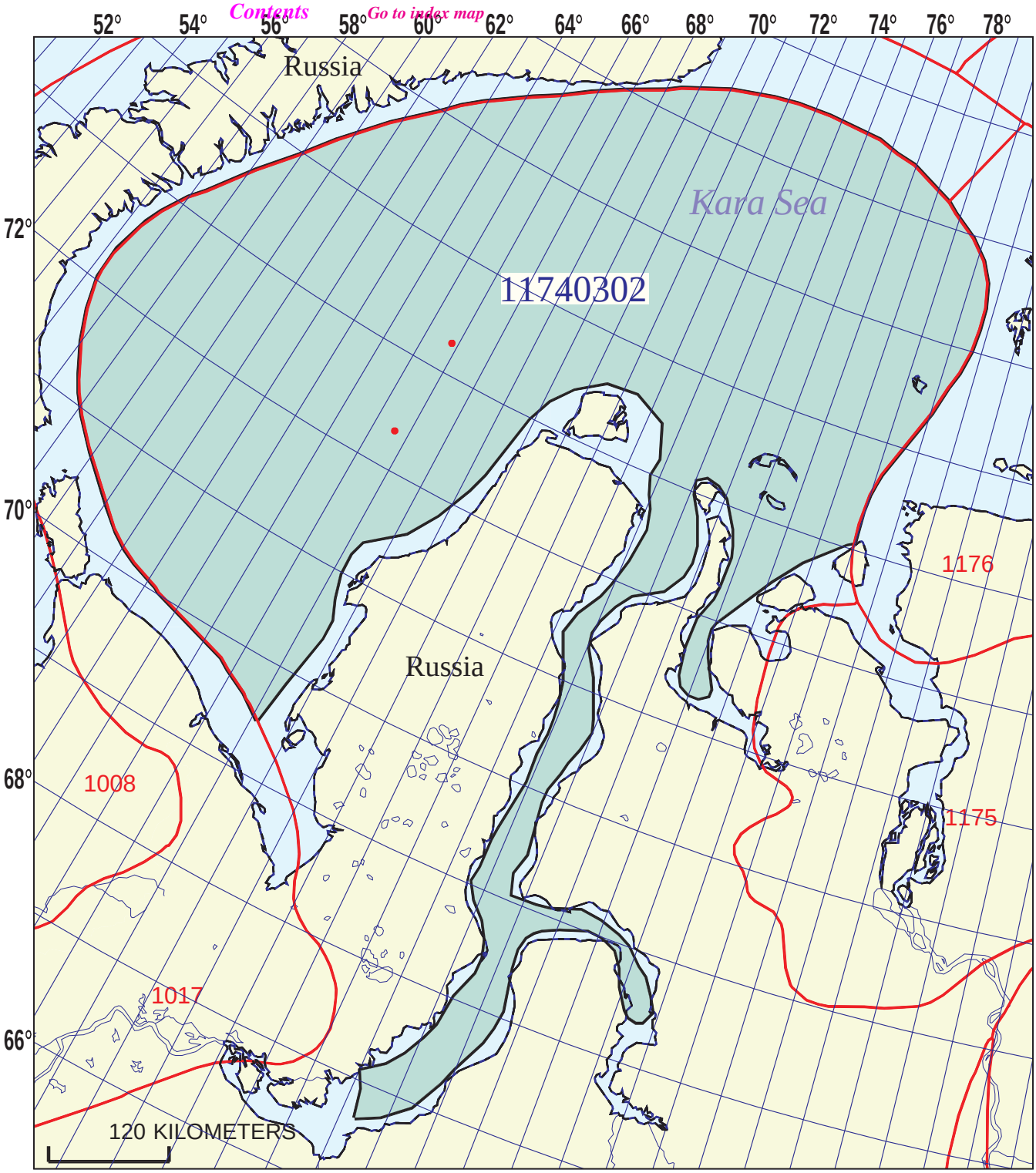
U.S. GEOLOGICAL SURVEY WORLD PETROLEUM ASSESSMENT 2000— DESCRIPTION AND RESULTS
U.S. Geological Survey World Energy Assessment Team



South Kara Sea Offshore
Assessment Unit - 11740302

EXPLANATION

- Hydrography
- Shoreline
- 1174 Geologic province code and boundary
- Country boundary
- Gas field centerpoint
- Oil field centerpoint
- 11740302 Assessment unit code and boundary

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

USGS science for a changing world

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

Date:……..	12/7/99		
Assessment Geologist:……..	G.F. Ulmishek		
Region:……..	Former Soviet Union	Number:	1
Province:……..	West Siberian Basin	Number:	1174
Priority or Boutique……	Priority		
Total Petroleum System:……	Northern West Siberian Mesozoic Composite	Number:	117403
Assessment Unit:……..	South Kara Sea Offshore	Number:	11740302
* Notes from Assessor	No standard U.S. growth functions were applied; however, field growth is recognized. Two supergiant fields greater than 25 TCFG. Offshore includes Ob Bay estuary.		

CHARACTERISTICS OF ASSESSMENT UNIT

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

What is the minimum field size?……. 20 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: 0 Gas: 2

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.	20	max no.	60
Gas fields:……min. no. (>0)	10	median no.	70	max no.	160

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	20	median size	75	max. size	4000
Gas in gas fields (bcfg):……min. size	120	median size	1200	max. size	300000

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)……	3000	5500	8000
NGL/gas ratio (bngl/mmcfg)……	30	60	90

Gas fields:	minimum	median	maximum
Liquids/gas ratio (bngl/mmcfg)……	12	25	38
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)……	25	42	55
Sulfur content of oil (%)……	0.2	1.2	2.2
Drilling Depth (m) ……	1000	2500	4000
Depth (m) of water (if applicable)……	0	100	400

Gas Fields:	minimum	median	maximum
Inert gas content (%)……	1.5	2	3
CO_2 content (%)……	0.3	0.4	0.6
Hydrogen-sulfide content (%)……	0	0	0
Drilling Depth (m)……	1000	2000	4500
Depth (m) of water (if applicable)……	0	100	400

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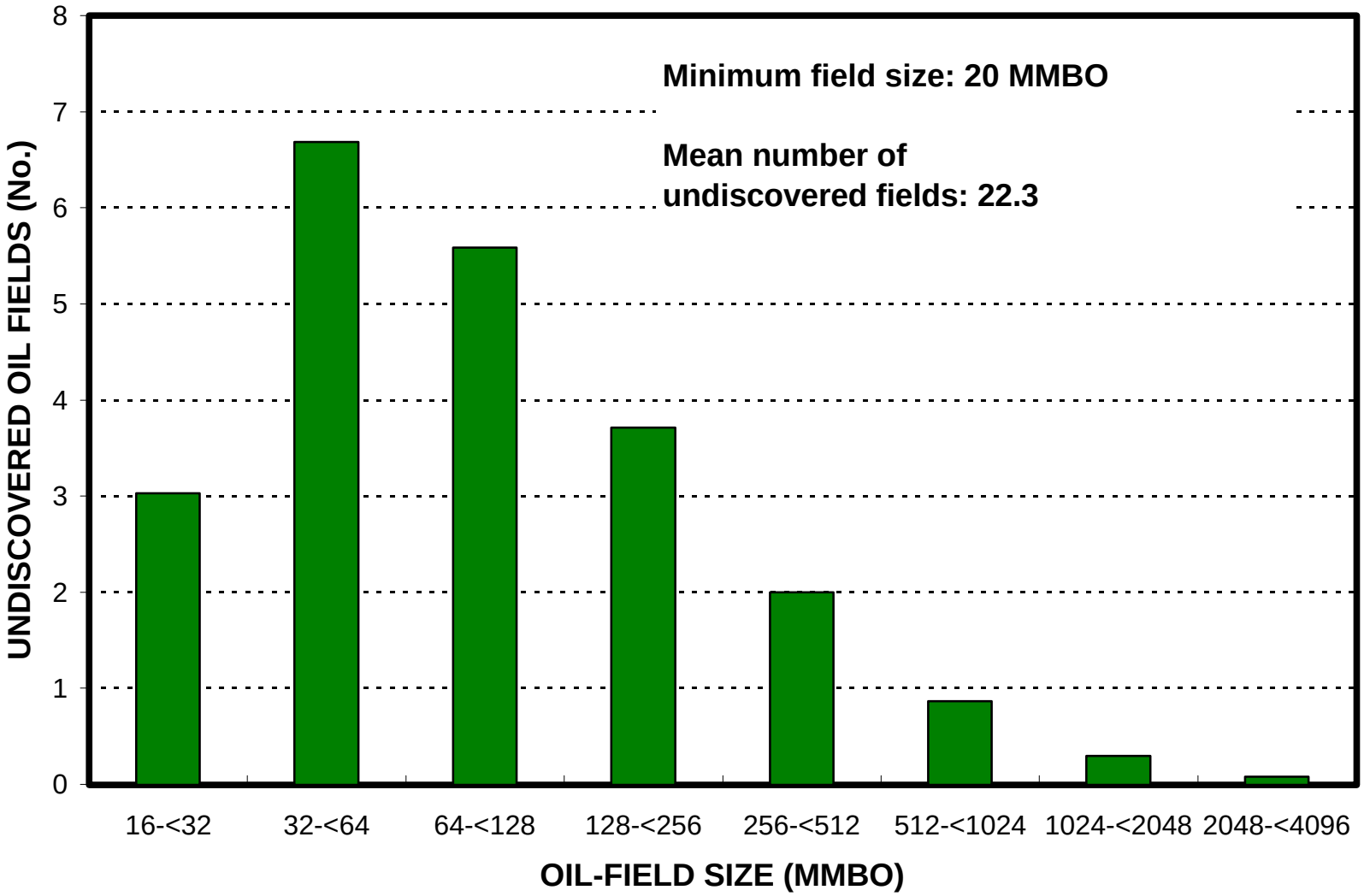
ALLOCATION OF UNDISCOVERED RESOURCES IN THE ASSESSMENT UNIT TO COUNTRIES OR OTHER LAND PARCELS (uncertainty of fixed but unknown values)

1. 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%)……		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	

South Kara Sea Offshore, AU 11740302
Undiscovered Field-Size Distribution



South Kara Sea Offshore, AU 11740302
Undiscovered Field-Size Distribution