Go to Table of Contents

Go to index map

Self-Sourced Bazhenov Fractured Reservoirs Assessment Unit 11740102

Self-Sourced Bazhenov Fractured Reservoirs Assessment Unit 11740102

West Siberian Basin Geologic Province 1174

Geologic Summary

Detailed map of this assessment unit

Assessment Input Data

Assessment Results

This assessment unit was not assessed quantitatively.

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

PETROLEUM SYSTEM: Bazhenov-Neocomian (117401)

ASSESSMENT UNIT: Self-Sourced Bazhenov Fractured Reservoirs (11740102)

DESCRIPTION: This unconventional assessment unit includes fractured Bazhenov siliceous shales, which are also source rocks for these reservoirs. The shales cover most of the basin, but their productivity has been demonstrated mainly in the Greater Salym area. In-place resources of oil are apparently very large, but the ability of the reservoir rocks to produce varies greatly and is poorly understood. There is much similarity between this unit and the Bakken play of the Williston basin.

SOURCE ROCKS: Source rocks are deep-marine siliceous and calcareous shales and siliciliths of the Volgian-lower Berriasian Bazhenov Formation. The formation is 20 to 50 m thick and contains 5 to 20 percent TOC. The kerogen is of Type II.

MATURATION: The Bazhenov Formation is presently in the oil window zone over most of the petroleum system area. Maximum maturation was achieved in the Oligocene.

MIGRATION: Only primary migration from generation sites in the source rocks to fractures is characteristic of the assessment unit.

RESERVOIR ROCKS: Reservoir rocks are fractured horizons of the Bazhenov Formation. Fracturing along bedding planes strongly dominates and was probably caused by hydrocarbon generation and associated overpressure that exceeded lithostatic pressure.

TRAPS: Traps are zones of fracturing that are areally and stratigraphically limited. Apparently, productive areas are associated with source rocks that have achieved higher maturity.

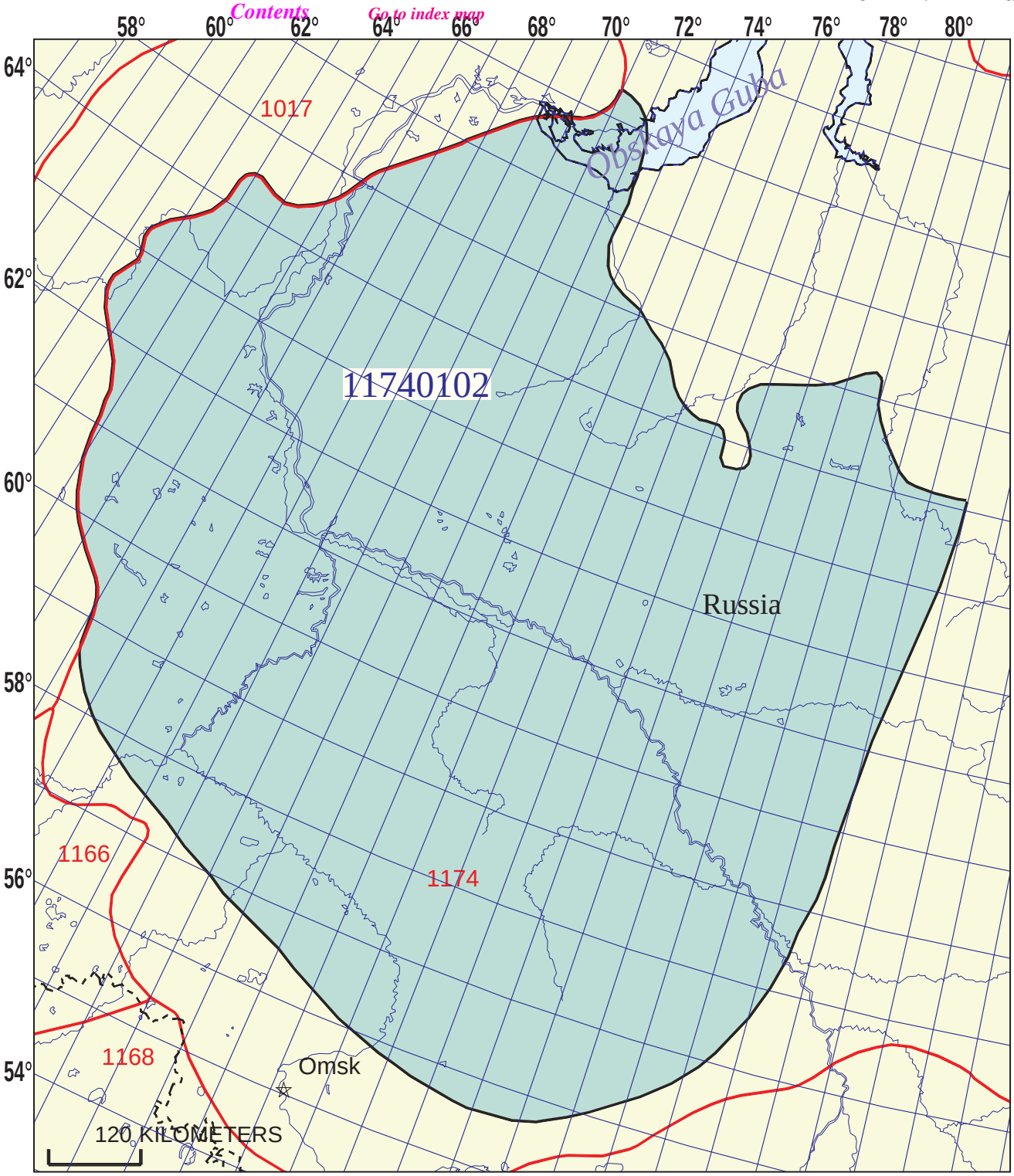
SEALS: Fractured reservoirs are sealed by nonfractured Bazhenov shales as well as by shale beds underlying and overlying the Bazhenov Formation.

REFERENCES:

Dorofeeva, T.V., ed., 1992, Local prognosis of oil pools in the Bazhenov Formation (Lokalnyi prognoz zalezhey nefti bazhenovskoy svity): Moscow, Nedra, 144 p.

Nesterov, I.I., Ushatinsky, I.N., Malykhin, A.Ya., Stavitsky, B.P., and Pyankov, B.N., 1987, Petroleum productivity of shale rocks of West Siberia (Neftegazonosnost glinistykh porod Zapadnoy Sibiri): Moscow, Nedra, 256 p.

Vyshemirsky, V.S., ed., 1986, Bazhenov Horizon of West Siberia (Bazhenovskiy gorizont Zapadnoy Sibiri), Institute of Geology and Geophysics, Siberian Branch of the USSR Academy of Sciences, Trudy, v. 649, 217 p.



Self-Sourced Bazhenov Fractured Reservoirs Assessment Unit - 11740102

EXPLANATION

- Hydrography
- Shoreline
- 1174 Geologic province code and boundary
- Country boundary
- Gas field centerpoint
- Oil field centerpoint
- 11740102 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:…….. 12/6/99
Assessment Geologist:…….. G.F. Ulmishek
Region:…….. Former Soviet Union Number: 1
Province:…….. West Siberian Basin Number: 1174
Priority or Boutique…… Priority
Total Petroleum System:…… Bazhenov-Neocomian Number: 117401
Assessment Unit:…… Self-Sourced Bazhenov Fractured Reservoirs Number: 11740102
* Notes from Assessor This unconventional continuous deposit was not assessed quantitatively.

CHARACTERISTICS OF ASSESSMENT UNIT

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

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

Median size (grown) of discovered oil fields (mmboe):
1st 3rd _____ 2nd 3rd _____ 3rd 3rd _____
Median size (grown) of discovered gas fields (bcfg):
1st 3rd _____ 2nd 3rd _____ 3rd 3rd _____

Assessment-Unit Probabilities:

Attribute	Probability of occurrence (0-1.0)
1. **CHARGE:** Adequate petroleum charge for an undiscovered field ≥ minimum size……	
2. **ROCKS:** Adequate reservoirs, traps, and seals for an undiscovered field ≥ minimum size……	
3. **TIMING OF GEOLOGIC EVENTS:** Favorable timing for an undiscovered field ≥ minimum size	

Assessment-Unit GEOLOGIC Probability (Product of 1, 2, and 3):…….. _____

4. **ACCESSIBILITY:** Adequate location to allow exploration for an undiscovered field ≥ minimum size…… _____

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) _____ median no. _____ max no. _____
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 _____ median size _____ max. size _____
Gas in gas fields (bcfg):……min. size _____ median size _____ max. size _____

Assessment Unit (name, no.)

_____

AVERAGE RATIOS FOR UNDISCOVERED FIELDS, TO ASSESS COPRODUCTS

(uncertainty of fixed but unknown values)

Oil Fields:	minimum	median	maximum
Gas/oil ratio (cfg/bo)……			
NGL/gas ratio (bngl/mmcfg)……			

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)……			
Sulfur content of oil (%)……			
Drilling Depth (m) ……			
Depth (m) of water (if applicable)……			

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

Assessment Unit (name, no.)

_____

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

1. _____ represents _____ areal % of the total assessment unit

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

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%)……			