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Jurassic-Tertiary Reservoirs Assessment Unit 11500201

Jurassic-Tertiary Reservoirs Assessment Unit 11500201

North Ustyurt Basin Geologic Province 1150

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: North Ustyurt Basin (1150) **GEOLOGIST:** G.F. Ulmishek

PETROLEUM SYSTEM: North Ustyurt Jurassic (115002)

ASSESSMENT UNIT: Jurassic-Tertiary Reservoirs (11500201)

DESCRIPTION: The assessment unit encompasses the entire petroleum system. It includes Jurassic through Tertiary rocks of basin areas that are located east of the Buzachi Peninsula. The unit contains several discovered oil fields in Jurassic rocks and several gas fields in Eocene rocks.

SOURCE ROCKS: Geochemical data on source rocks are scarce. However, geologic data clearly indicate that source rocks for discovered oils are located in the Middle Jurassic section. Probably, the source rocks are Bajocian and Bathonian mostly continental shales containing mixed kerogen of Types I and III. Gas in Eocene reservoirs may be of biogenic origin or could have migrated vertically from Jurassic source rocks.

MATURATION: No information on source rocks maturity is available. Probably, Middle Jurassic source rocks occur in oil window and in the upper part of gas window over most of the assessment unit area. Thickness of rocks suggests that main maturation stage was Late Cretaceous time.

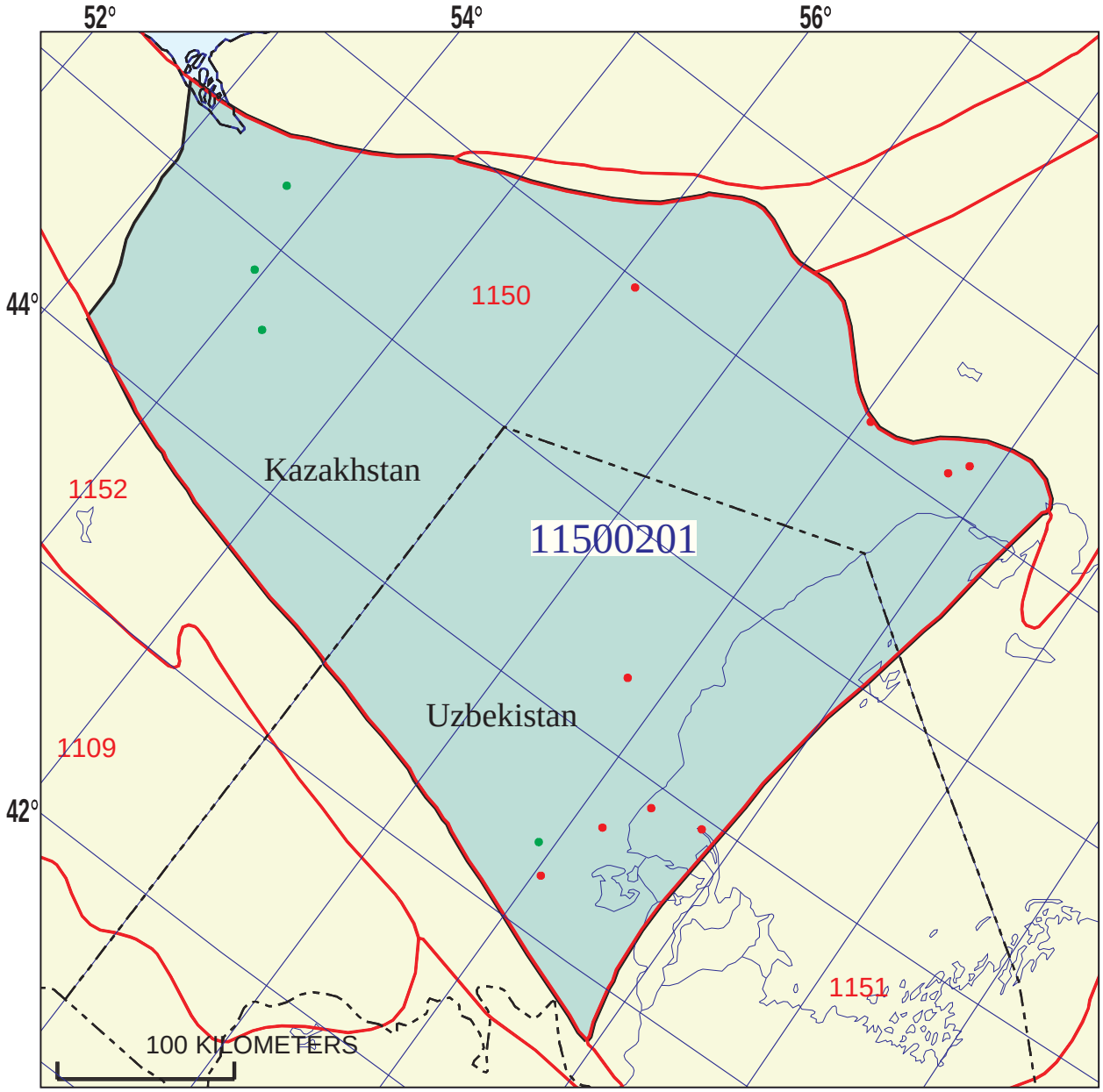
RESERVOIR ROCKS: Reservoir rocks are continental to marine Jurassic sandstones with low to moderate porosity and variable, but often rather low, permeability. Commonly the sandstones are laterally discontinuous. Gas-productive Upper Eocene sandstones are shallow and possess excellent reservoir properties.

TRAPS: Discovered fields are in structural traps that are mostly gentle, platform-type local anticlines. However, lithology and facies of Jurassic rocks indicate high probability for the presence of stratigraphic traps.

REFERENCES:

Gabrielyants, G.A., ed., 1991, Regional geology of petroleum regions of the USSR (Regionalnaya geologiya neftegazonosnykh territory SSSR): Moscow Nedra, 284 p.

Ozdoev, C.M., 1977, Tectonics and petroleum potential of North Ustyurt (Tektonika I neftegazonosnost Severnogo Ustyurta): Alml-Ata, Kazakhstan, Nauka, 102 p.



Jurassic-Tertiary Reservoirs
Assessment Unit - 11500201

EXPLANATION

- Hydrography
- Shoreline
- 1150 Geologic province code and boundary
- Country boundary
- Gas field centerpoint
- Oil field centerpoint
- 11500201 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:……..	12/29/99		
Assessment Geologist:……..	G.F. Ulmishek		
Region:……..	Former Soviet Union	Number:	1
Province:……..	North Ustyurt Basin	Number:	1150
Priority or Boutique……	Priority		
Total Petroleum System:……	North Ustyurt Jurassic	Number:	115002
Assessment Unit:……	Jurassic-Tertiary Reservoirs	Number:	11500201
* Notes from Assessor	No growth factor applied.		

CHARACTERISTICS OF ASSESSMENT UNIT

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

What is the minimum field size?……. 3 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: 3 Gas: 7
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 157 2nd 3rd 60 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)	2	median no.	10	max no.	25
Gas fields:……min. no. (>0)	5	median no.	25	max no.	60

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	3	median size	8	max. size	200
Gas in gas fields (bcfg):……min. size	18	median size	48	max. size	1200

Assessment Unit (name, no.)
Jurassic-Tertiary Reservoirs, 11500201

AVERAGE RATIOS FOR UNDISCOVERED FIELDS, TO ASSESS COPRODUCTS

(uncertainty of fixed but unknown values)

Oil Fields:	minimum	median	maximum
Gas/oil ratio (cfg/bo)……	400	800	1200
NGL/gas ratio (bngl/mmcfg)……	30	60	90

Gas fields:	minimum	median	maximum
Liquids/gas ratio (bngl/mmcfg)……	15	30	45
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)……	35	42	52
Sulfur content of oil (%)……	0.03	0.1	0.2
Drilling Depth (m) ……	2000	2800	4000
Depth (m) of water (if applicable)……	0	3	10

Gas Fields:	minimum	median	maximum
Inert gas content (%)……	2	6	9
CO_2 content (%)……	0.1	1	2
Hydrogen-sulfide content (%)……	0	0	0
Drilling Depth (m)……	400	3200	5000
Depth (m) of water (if applicable)……	0	3	10

Assessment Unit (name, no.)
Jurassic-Tertiary Reservoirs, 11500201

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

1. Kazakhstan represents 65 areal % of the total assessment unit

Oil in Oil Fields:	minimum	median	maximum
Richness factor (unitless multiplier):……			
Volume % in parcel (areal % x richness factor):…		65	
Portion of volume % that is offshore (0-100%)……		5	

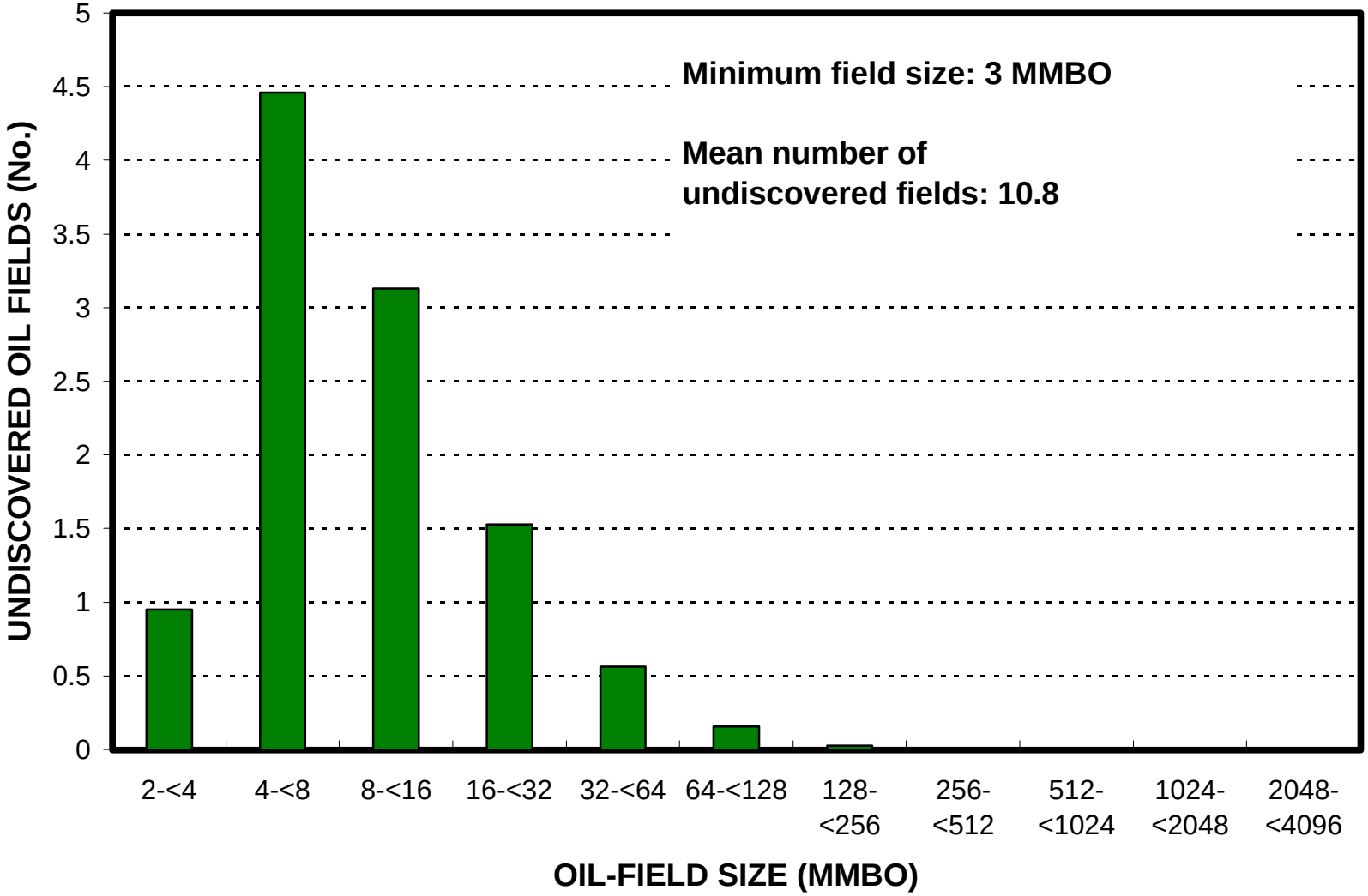
Gas in Gas Fields:	minimum	median	maximum
Richness factor (unitless multiplier):……			
Volume % in parcel (areal % x richness factor):…		65	
Portion of volume % that is offshore (0-100%)……		5	

2. Uzbekistan represents 35 areal % of the total assessment unit

Oil in Oil Fields:	minimum	median	maximum
Richness factor (unitless multiplier):……			
Volume % in parcel (areal % x richness factor):…		35	
Portion of volume % that is offshore (0-100%)……		20	

Gas in Gas Fields:	minimum	median	maximum
Richness factor (unitless multiplier):……			
Volume % in parcel (areal % x richness factor):…		35	
Portion of volume % that is offshore (0-100%)……		20	

Jurassic-Tertiary Reservoirs, AU 11500201
Undiscovered Field-Size Distribution



Jurassic-Tertiary Reservoirs, AU 11500201
Undiscovered Field-Size Distribution