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Murgab Depression Suprasalt Assessment Unit 11540103

Murgab Depression Suprasalt Assessment Unit 11540103

Amu-Darya Basin Geologic Province 1154

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: Amu-Darya Basin (1154) **GEOLOGIST:** G.F. Ulmishek

TOTAL PETROLEUM SYSTEM: Amu-Darya Jurassic-Cretaceous (115401)

ASSESSMENT UNIT: Murgab Depression Suprasalt (11540103)

DESCRIPTION: Unit encompasses Cretaceous and younger rocks of the central basin area in boundaries of the underlying Upper Jurassic evaporite formation. The unit contains only gas fields and those are located in central and northeastern areas.

SOURCE ROCKS: The principal source rocks are Lower-Middle Jurassic coaly clastics and coals and Upper Jurassic anoxic black shale. Both source rocks are separated from Cretaceous reservoirs by regional, substantially undeformed salt seal. The precise mechanism of migration from the source to the reservoirs is not clear. A possible model includes vertical migration beyond the pinch-out boundary of the salt formation and following long-distance lateral migration to traps. Hydrocarbon contribution from Lower Cretaceous organic-lean shales, if any, is minimal.

MATURATION: Both Jurassic source rocks are buried deep in the gas window and occur in the high maturity zone since at least Late Cretaceous time.

RESERVOIR ROCKS: Principal reservoir rocks are sandstones of the Hauterivian Shatlyk Formation several tens of meters thick. The sandstones possess high porosity and permeability and contain most of the gas reserves. Other Cretaceous reservoir rocks are of secondary importance.

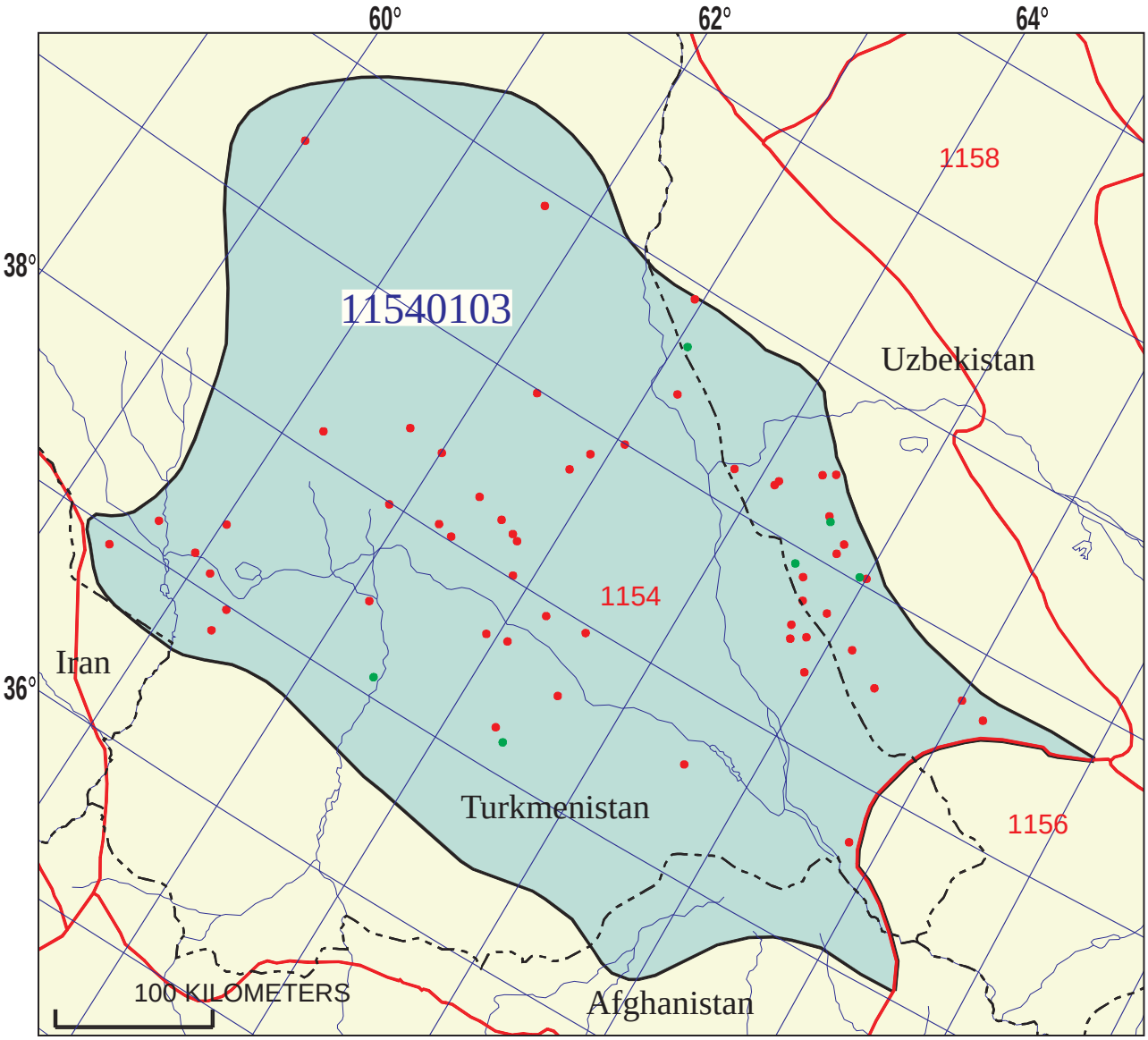
TRAPS: All known fields are in structural traps.

SEALS: The Shatlyk Formation reservoirs are sealed by an extensive Barremian-Aptian shale formation. Intraformational shale beds seal gas pools in other reservoirs.

REFERENCES:

Kryuchkov, V.E., 1996, Lithology of Shatlyk Formation rocks of the Malay-Chartak zone of uplifts in connection with petroleum potential of eastern Turkmenistan: Geologiya Nefti i Gaza, no. 5, p. 4-8.

Maksimov, S.P., Kleschev, K.A., and Shein, V.S., eds., 1986, Geology and geodynamics of petroleum-productive areas of the southern USSR (Geologiya i geodinamika neftegazonosnykh territoriy yuga SSSR): Trudy VNIGNI, v. 255, Moscow, Nedra, 232 p.



Murgab Depression Suprasalt Assessment Unit - 11540103

EXPLANATION

- Hydrography
- Shoreline
- 1154 Geologic province code and boundary
- Country boundary
- Gas field centerpoint
- Oil field centerpoint
- 11540103 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:……..	7/27/99		
Assessment Geologist:……..	G.F. Ulmishek		
Region:……..	Former Soviet Union	Number:	1
Province:……..	Amu-Darya Basin	Number:	1154
Priority or Boutique……	Priority		
Total Petroleum System:……	Amu-Darya Jurassic-Cretaceous	Number:	115401
Assessment Unit:……..	Murgab Depression Suprasalt	Number:	11540103
* Notes from Assessor	Twenty additional fields in Petroconsultants' database have no reserve data.		
	Field sizes not grown.		

CHARACTERISTICS OF ASSESSMENT UNIT

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

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: 0 Gas: 23
Established (>13 fields) X 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 589 2nd 3rd 935 3rd 3rd 170

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)		median no.		max no.	
Gas fields:……min. no. (>0)	10	median no.	40	max no.	110

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	18	median size	60	max. size	2000

Assessment Unit (name, no.)
Murgab Depression Suprasalt, 11540103

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)……	4	7	10
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 (%)……	0.5	1.5	6
CO_2 content (%)……	0.5	1	3
Hydrogen-sulfide content (%)……	0	0	0.2
Drilling Depth (m)……	2000	3000	4000
Depth (m) of water (if applicable)……			

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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. Turkmenistan represents 85 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):…		85	
Portion of volume % that is offshore (0-100%)……		0	

2. Uzbekistan represents 10 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):…		10	
Portion of volume % that is offshore (0-100%)……		0	

3. Afghanistan represents 5 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):…		5	
Portion of volume % that is offshore (0-100%)……		0	

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Undiscovered Field-Size Distribution