Go to Table of Contents

Go to index map

Gograndag-Okarem Zone and Adjacent Shelf Assessment Unit 11120103

Gograndag-Okarem Zone and Adjacent Shelf Assessment Unit 11120103

South Caspian Basin Geologic Province 1112

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: South Caspian Basin (1112) **GEOLOGIST:** L.S. Smith-Rouch

TOTAL PETROLEUM SYSTEM: Oligocene-Miocene Maykop/Diatom (111201)

ASSESSMENT UNIT: Gograndag-Okarem Zone and Adjacent Shelf (11120103)

DESCRIPTION: The Western Turkmenistan assessment unit is located in the northwest and western section South Caspian Basin. All the fields but one lie in Turkmenistan with one well in northeast Iran. Elongate structures onshore are orientated by deep transcurrent faults that have been active since the Mesozoic. The Pliocene fluvial-deltaic sequence is noted for its great thickness offshore (greater than 4 km).

SOURCE ROCK: The source rock (oil data from Apsherson oils) is primarily a Type II kerogen and extends throughout the entire basin from the Oligocene-Miocene Maykop and Diatom Formations and thickens toward central basin offshore. Most oils are sourced from the same organic facies (sterane data), slightly calcareous, algal marine clastic facies. Total organic carbon content is as much as 10 percent and Hydrogen Index ranges from 150 to 500. A second potential source rock may be present in thick Pliocene deltaic sediments.

MATURATION: Low temperature gradients near the coast and deep burial depths place the oil generating window for the entire Pliocene section today.

MIGRATION: Broad anticlinal structures and little offshore folding indicate potential migration from the time of generation with the bulk of migration in the Middle Pliocene to Late Quaternary. This phase is synchronous with rapid sedimentation rates.

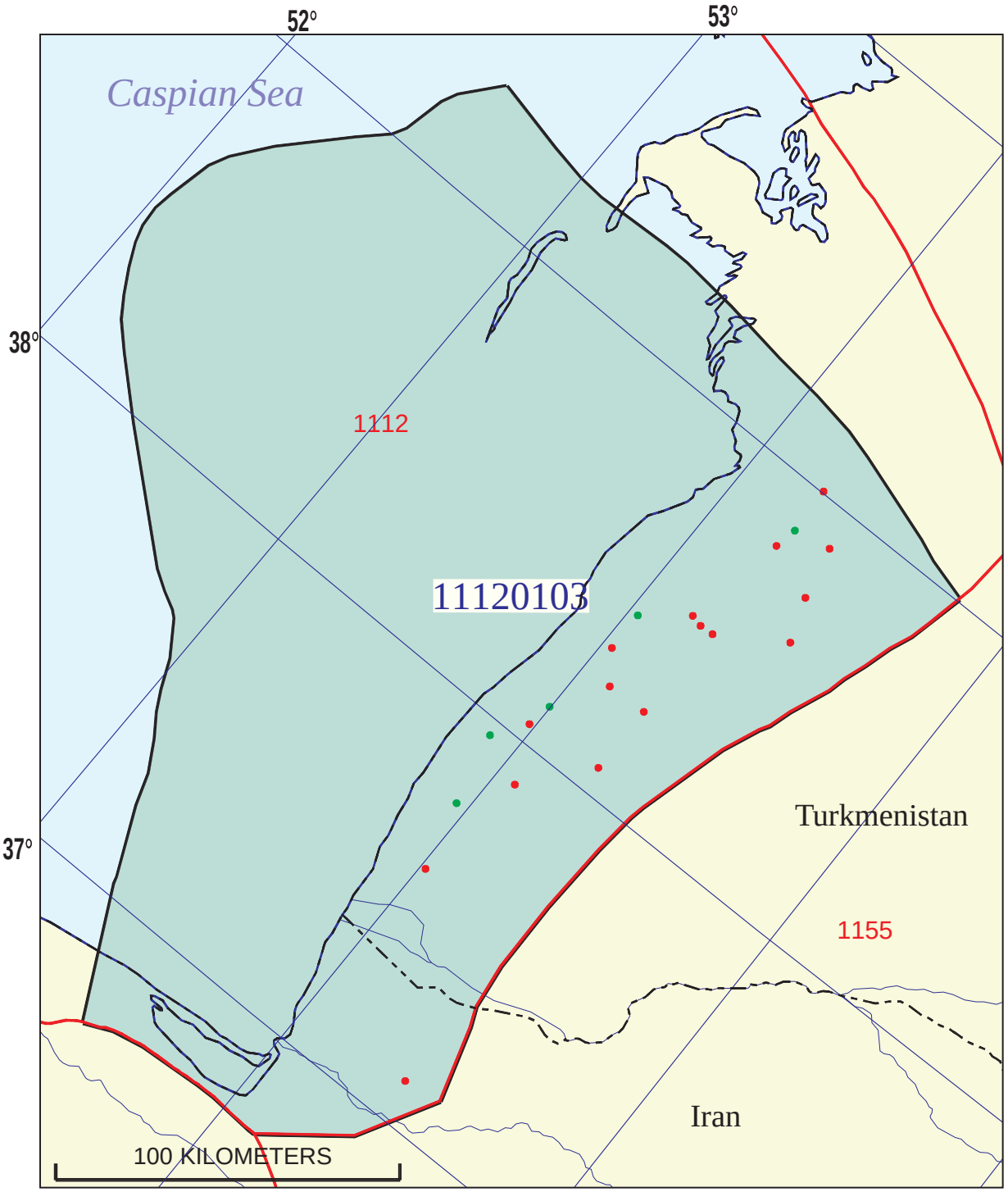
RESERVOIR ROCKS: To date reservoirs are primarily in the Middle Pliocene, Upper Red Color (Beds) with future prospects in the Lower Red Color (Beds) and Miocene. The paleo-Amu Darya and possibly a fluvial-deltaic system just south, the paleo-Uzboj deposited sediments. The reservoir section is greater than 4 km thick offshore. Reservoirs are fluvial-deltaic, slope and turbidite depositional facies. Alternating shales, fine-grained silts, and siltstones. Seismic profiles indicate many potential turbidite reservoirs in the offshore sector. Good quality Miocene reservoirs have been drilled in the Kizyl-Kum trough. To the south, onshore these age reservoirs are preserved on structural crests and are thinner and poorer quality; however, flanks of structures may have more potential. Typical fields are anticlinal structures cored by shale diapirs and mud volcanoes, shale sourced from Jurassic carbonates.

TRAPS AND SEALS: Traps developed as anticlinal structures and diapirs formed, associated with rapid sedimentation rates in the Middle Pliocene, but continued into the Quaternary. Stratigraphic is good future reservoir targets. Seals are more effective in the northern and central sectors, since gas leaks are interpreted on seismic profiles in the southern area.

REFERENCES:

Abrams, M.A, and Narimanov, A. A., 1997, Geochemical evaluation of hydrocarbons and their potential sources in the western South Caspian depression, Republic of Azerbaijan: Marine and Petroleum Geology, v. 14, n.4, pp.451-468.

O'Conner Jr., R.F., Castle, R.A., and Nelson, D.R., 1993, Western Turkmenistan-1 Future oil and gas potential in southern Caspian Basin: Oil and Gas Journal, May 3, 1993, p 117-125.



Gograndag-Okarem Zone and Adjacent Shelf Assessment Unit - 11120103

EXPLANATION

- Hydrography
- Shoreline
- 1112 — Geologic province code and boundary
- Country boundary
- Gas field centerpoint
- Oil field centerpoint
- 11120103 — 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:……..	1/11/00		
Assessment Geologist:……..	G.F. Ulmishek		
Region:……..	Former Soviet Union	Number:	1
Province:……..	South Caspian Basin	Number:	1112
Priority or Boutique……	Priority		
Total Petroleum System:……	Oligocene-Miocene Maykop/Diatom	Number:	111201
Assessment Unit:……	Gograndag-Okarem Zone and Adjacent Shelf	Number:	11120103
* Notes from Assessor	No growth factor used.		

CHARACTERISTICS OF ASSESSMENT UNIT

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

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: 5 Gas: 11
Established (>13 fields) X Frontier (1-13 fields) _____ Hypothetical (no fields) _____

Median size (grown) of discovered oil fields (mmboe):
1st 3rd 22 2nd 3rd 54 3rd 3rd _____
Median size (grown) of discovered gas fields (bcfg):
1st 3rd 398 2nd 3rd 56 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)	3	median no.	50	max no.	100
Gas fields:……min. no. (>0)	3	median no.	50	max no.	100

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	30	max. size	4000
Gas in gas fields (bcfg):……min. size	30	median size	180	max. size	24000

Assessment Unit (name, no.)
Gograndag-Okarem Zone and Adjacent Shelf, 11120103

AVERAGE RATIOS FOR UNDISCOVERED FIELDS, TO ASSESS COPRODUCTS

(uncertainty of fixed but unknown values)

Oil Fields:	minimum	median	maximum
Gas/oil ratio (cfg/bo)……	2000	4000	6000
NGL/gas ratio (bngl/mmcfg)……	30	60	90

Gas fields:	minimum	median	maximum
Liquids/gas ratio (bngl/mmcfg)……	22	44	66
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	37	52
Sulfur content of oil (%)……		0	
Drilling Depth (m) ……	2500	4000	7500
Depth (m) of water (if applicable)……	0	80	150

Gas Fields:	minimum	median	maximum
Inert gas content (%)……	0.5	0.8	1.5
CO_2 content (%)……	0.2	0.6	1.2
Hydrogen-sulfide content (%)……		0	
Drilling Depth (m)……	2500	4000	7500
Depth (m) of water (if applicable)……	0	80	150

Assessment Unit (name, no.)
Gograndag-Okarem Zone and Adjacent Shelf, 11120103

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):…		85	
Portion of volume % that is offshore (0-100%)……		90	

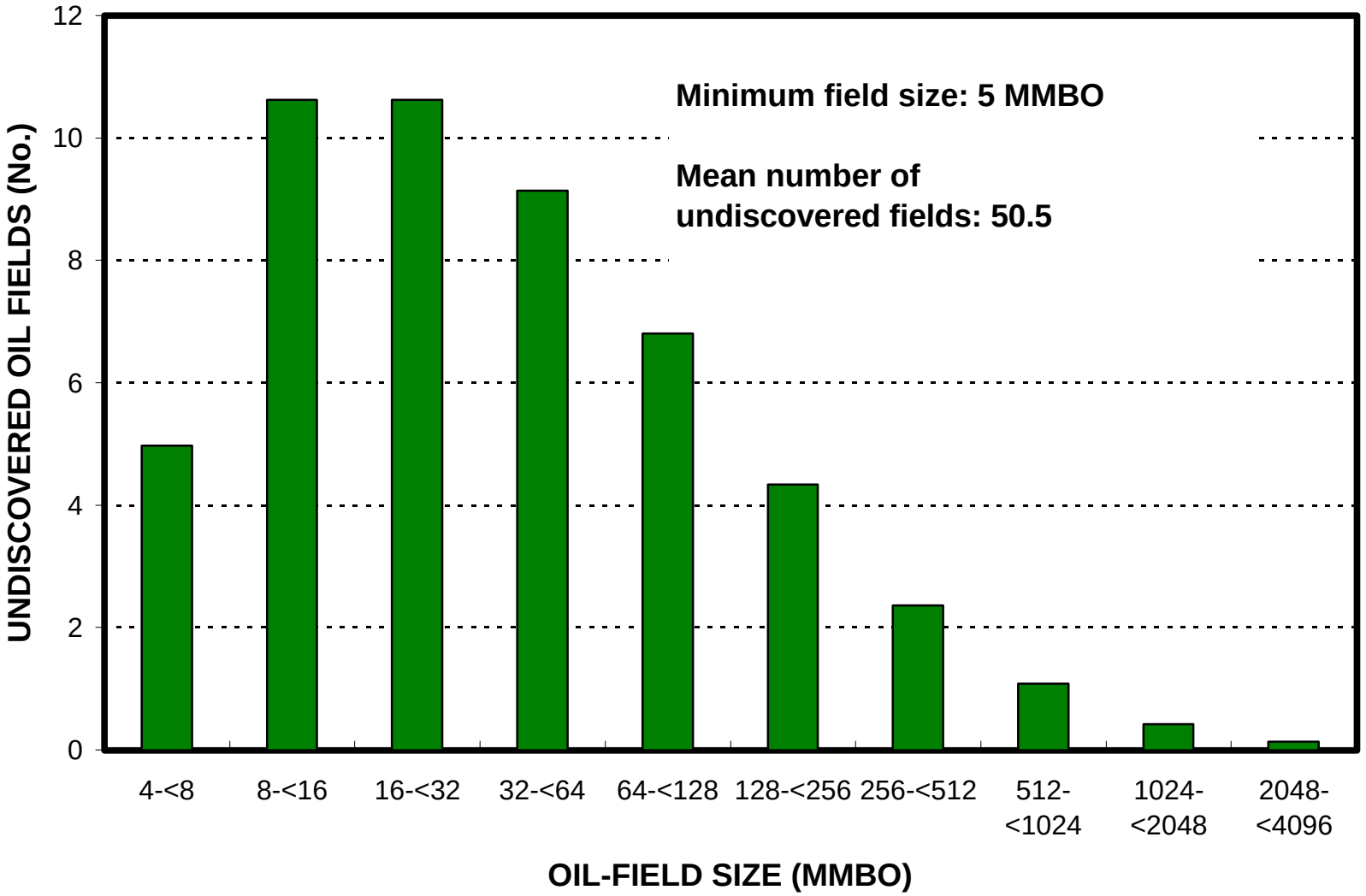
Gas in Gas Fields:	minimum	median	maximum
Richness factor (unitless multiplier):……			
Volume % in parcel (areal % x richness factor):…		85	
Portion of volume % that is offshore (0-100%)……		90	

2. Iran represents 15 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%)……		60	

Gas in Gas Fields:	minimum	median	maximum
Richness factor (unitless multiplier):……			
Volume % in parcel (areal % x richness factor):…		15	
Portion of volume % that is offshore (0-100%)……		60	

Gograndag-Okarem Zone and Adjacent Shelf, AU 11120103
Undiscovered Field-Size Distribution



Gograndag-Okarem Zone and Adjacent Shelf, AU 11120103
Undiscovered Field-Size Distribution