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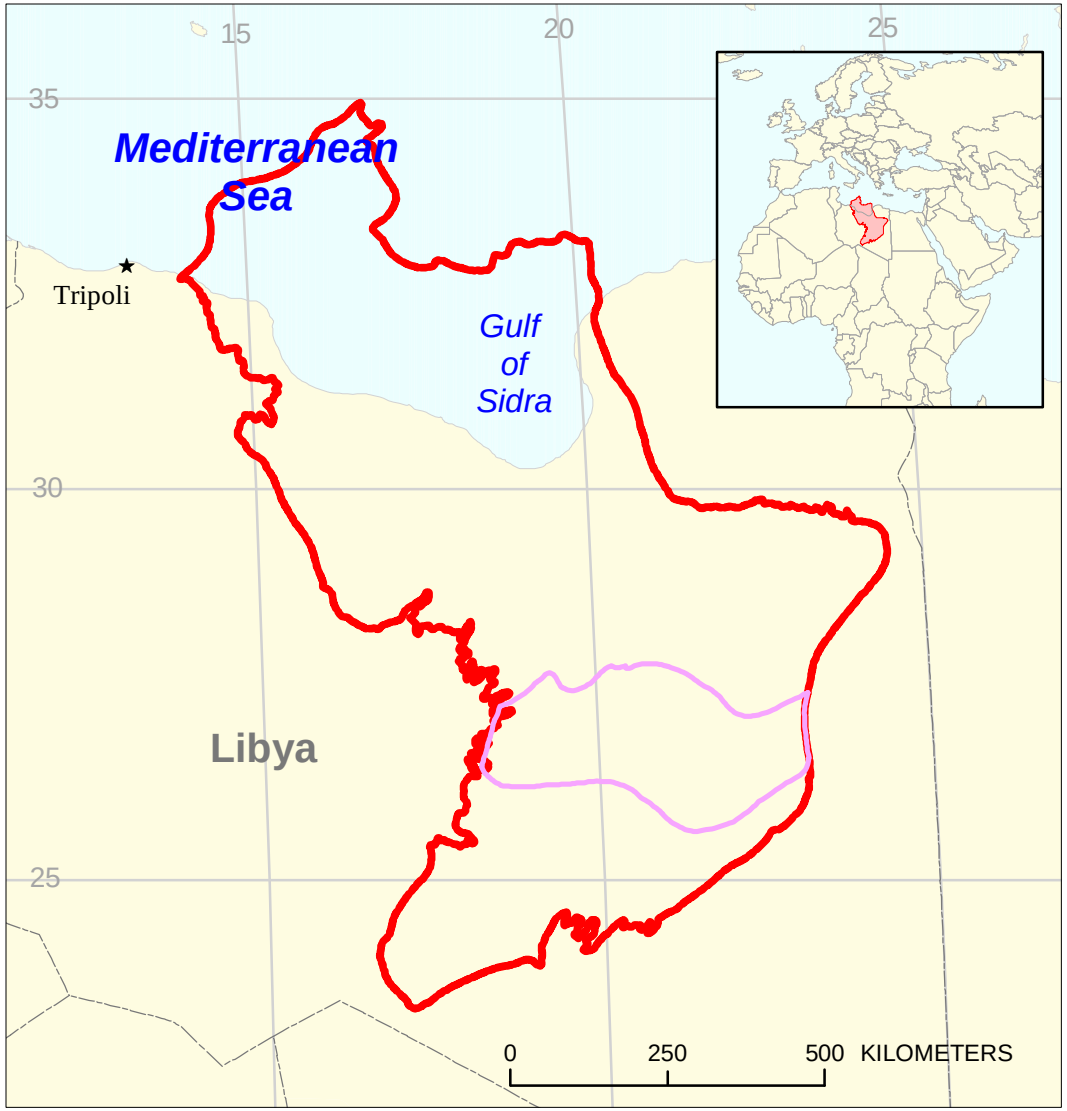
Southeast Sirte Hypothetical Assessment Unit 20430104



Southeast Sirte Hypothetical Assessment Unit 20430104
Sirte Basin Geologic Province 2043

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: Sirte Basin (2043) **GEOLOGIST:** T.S.Ahlbrandt

TOTAL PETROLEUM SYSTEM: Sirte-Zelten (204301)

ASSESSMENT UNIT: Southeast Sirte Hypothetical (20430104)

DESCRIPTION: Although more than 65 wildcat wells have been drilled in the southern part of the Sirte Basin, no production has been established nor significant shows observed. The unit is highly structured with major faults that potentially could charge these structures from deeper grabens where hydrocarbon generation has occurred. There is a significant potential reservoir in Cretaceous (Campanian) marine sandstone bars, and some authors suggest multiple possible petroleum systems in this area. The unit is assessed a 0.5 risk in one element, that is, charge, because to date no accumulations have been found in spite of exploration efforts.

SOURCE ROCKS: The upper Cretaceous (Campanian) Sirte Shale of the Rakb Group is by far the dominant source rock although other potential source rocks (for example, Triassic) are thought to exist.

MATURATION: Generation is thought to have begun in Eocene time (variously timed at 50 Ma to 40 Ma) and continues to present. Onshore the petroleum generated is dominantly oil.

MIGRATION: Cretaceous source rocks in the unit are not sufficiently deep to generate hydrocarbons locally so lateral migration is required along faults from the deeper grabens to the north. Stratigraphically older source rocks intervals remain speculative.

RESERVOIR ROCKS: A series of Cretaceous (Campanian) marine bar sandstones are the primary target along the southern and southeastern margin of the Sirte Basin.

TRAPS AND SEALS: The Eocene (Ypresian) Gir Formation, particularly the Hon Evaporite Member is considered to be the dominant seal in the Sirte Basin. The thickness and sealing potential of the Gir Formation are concerns for this hypothetical unit and were risked in the assessment.

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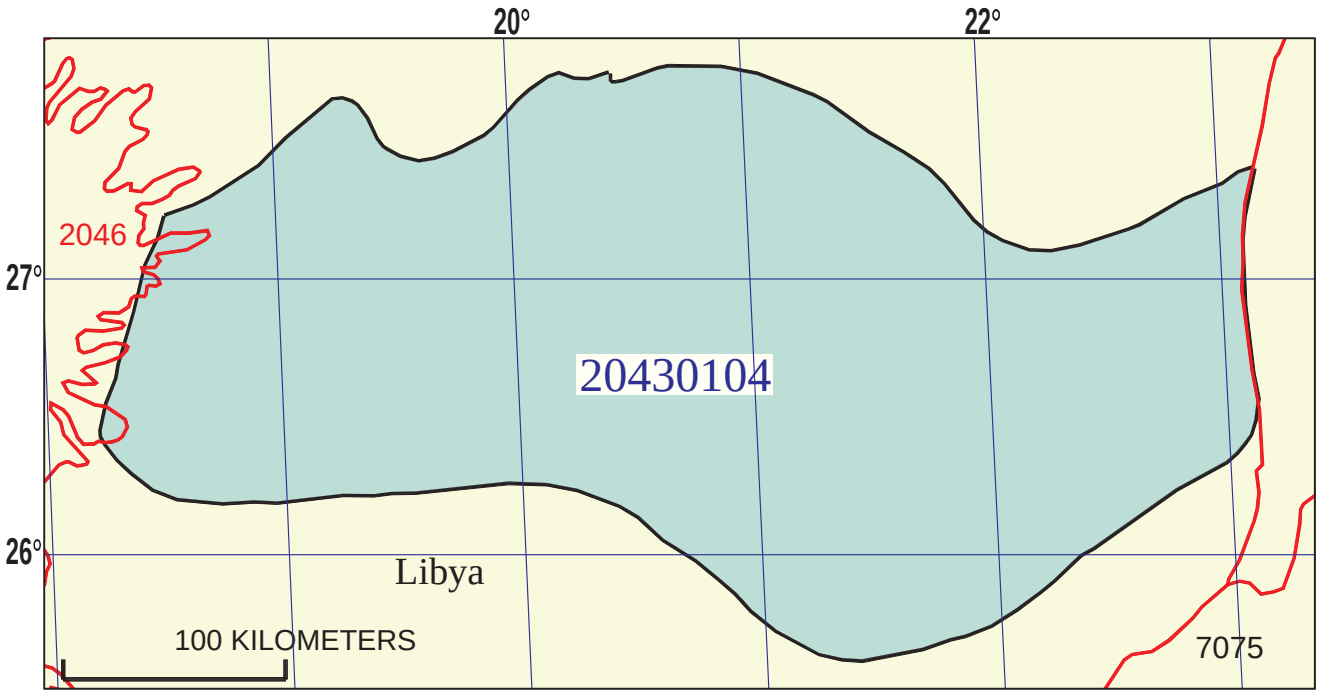
Montgomery, S., 1994, Sirte Basin, North-central Libya–prospects for the future: Petroleum Information Corporation, Petroleum Frontiers, v. 11, no. 1, 94 p.



Southeast Sirte Hypothetical Assessment Unit - 20430104

EXPLANATION

- Hydrography
- Shoreline
- 2043 Geologic province code and boundary
- Country boundary
- Gas field centerpoint
- Oil field centerpoint
- 20430104 Assessment unit code and boundary

Projection: Robinson. Central meridian: 0

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

Date:……..	6/19/98		
Assessment Geologist:……..	T.S. Ahlbrandt		
Region:……..	Middle East and North Africa	Number:	2
Province:……..	Sirte Basin	Number:	2043
Priority or Boutique……	Priority		
Total Petroleum System:……	Sirte-Zelten	Number:	204301
Assessment Unit:……..	Southeast Sirte Hypothetical	Number:	20430104
* Notes from Assessor	Lower 48 growth factor.		

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: 0 Gas: 0
Established (>13 fields) _____ Frontier (1-13 fields) _____ Hypothetical (no fields) X

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……	0.5
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):…….. 0.5

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.	15	max no.	30
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	5	median size	20	max. size	500
Gas in gas fields (bcfg):…… min. size	_____	median size	_____	max. size	_____

Assessment Unit (name, no.)
Southeast Sirte Hypothetical, 20430104

AVERAGE RATIOS FOR UNDISCOVERED FIELDS, TO ASSESS COPRODUCTS

(uncertainty of fixed but unknown values)

Oil Fields:	minimum	median	maximum
Gas/oil ratio (cfg/bo)……	100	220	500
NGL/gas ratio (bngl/mmcfg)……	50	60	70

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)……	30	36	42
Sulfur content of oil (%)……		0.3	
Drilling Depth (m) ……	500	3000	3500
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.)
Southeast Sirte Hypothetical, 20430104

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

1. Libya 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%)……		0	

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%)……			

Southeast Sirte Hypothetical, AU 20430104
Undiscovered Field-Size Distribution