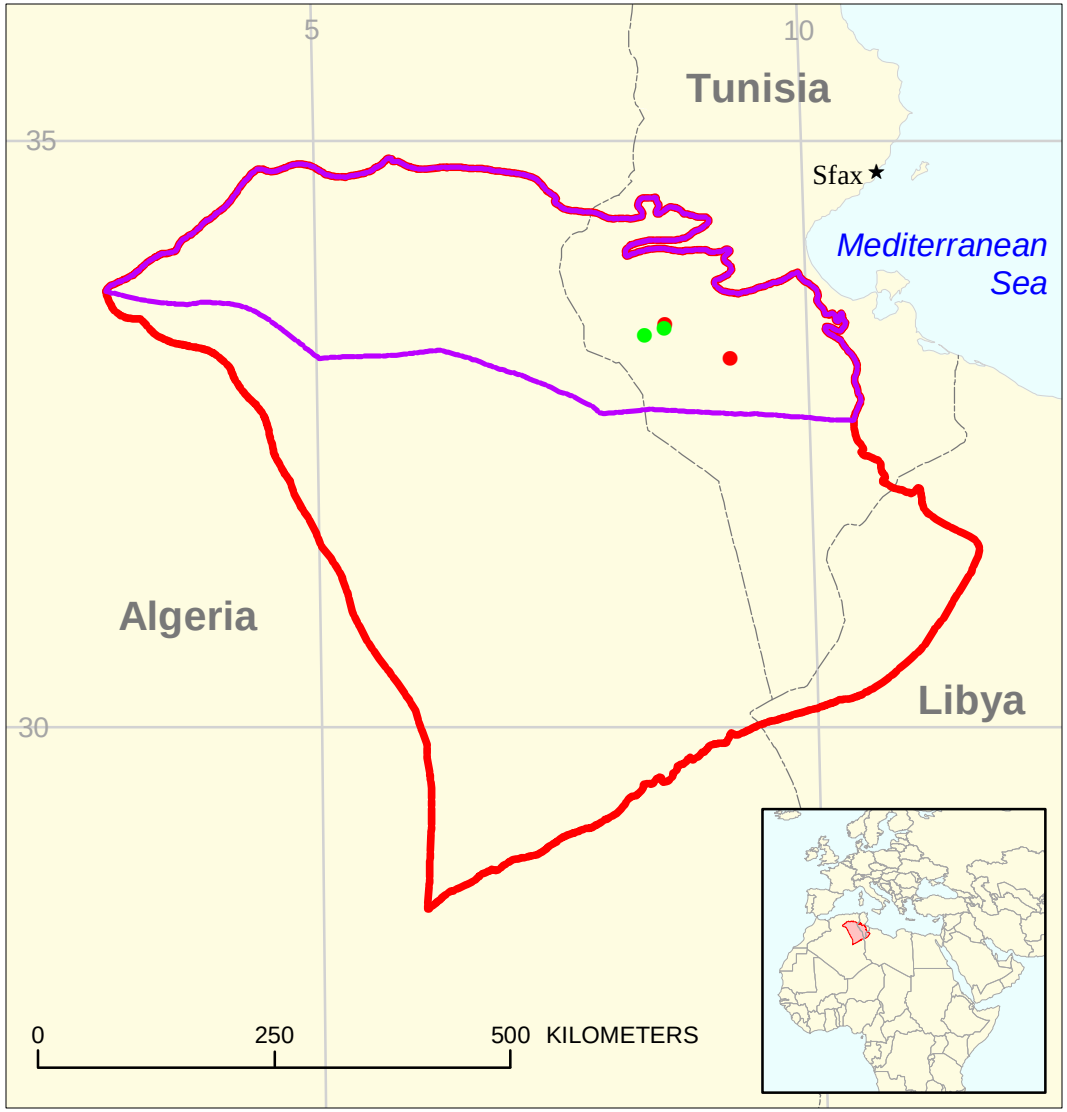
Go to Table of Contents

Go to index map

Tanezzuft-Melrhir Structural/Stratigraphic Assessment Unit 20540201



Tanezzuft-Melrhir Structural/Stratigraphic Total Petroleum System 20540201

Trias/Ghadames Basin Geologic Province 2054

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: Trias/Ghadames Basin (2054) **GEOLOGIST:** T.R. Klett

TOTAL PETROLEUM SYSTEM: Tanezzuft-Melrhir (205402)

ASSESSMENT UNIT: Tanezzuft-Melrhir Structural/Stratigraphic (20540201)

DESCRIPTION: This total petroleum system and corresponding assessment unit coincide with the Melrhir Basin (or Trough), bounded on the north by the Saharan Flexure, and on the south by the Tilrhemt and Talemzane-Gefara Arches. The Melrhir Basin is a shallow foreland basin.

SOURCE ROCKS: The primary source rock is mudstone of the Silurian Tanezzuft Formation.

MATURATION: Petroleum generation may have occurred as early as Carboniferous or Permian when a thick wedge of sediments was deposited in the northeastern portion of the basin. Generation probably peaked in the Cretaceous and continued into the late Eocene or Oligocene.

MIGRATION: Petroleum migrated vertically along faults or fractures and laterally into adjacent or juxtaposed reservoirs.

RESERVOIR ROCKS: Known reservoir rocks are Ordovician fluvial to marine sandstone and Triassic fluvial sandstone.

TRAPS AND SEALS: All of the known accumulations are in anticlines and tilted fault blocks, capped with Triassic to Jurassic evaporites, mudstone, and carbonate rocks. Intraformational Paleozoic marine mudstone provides secondary, lateral seals.

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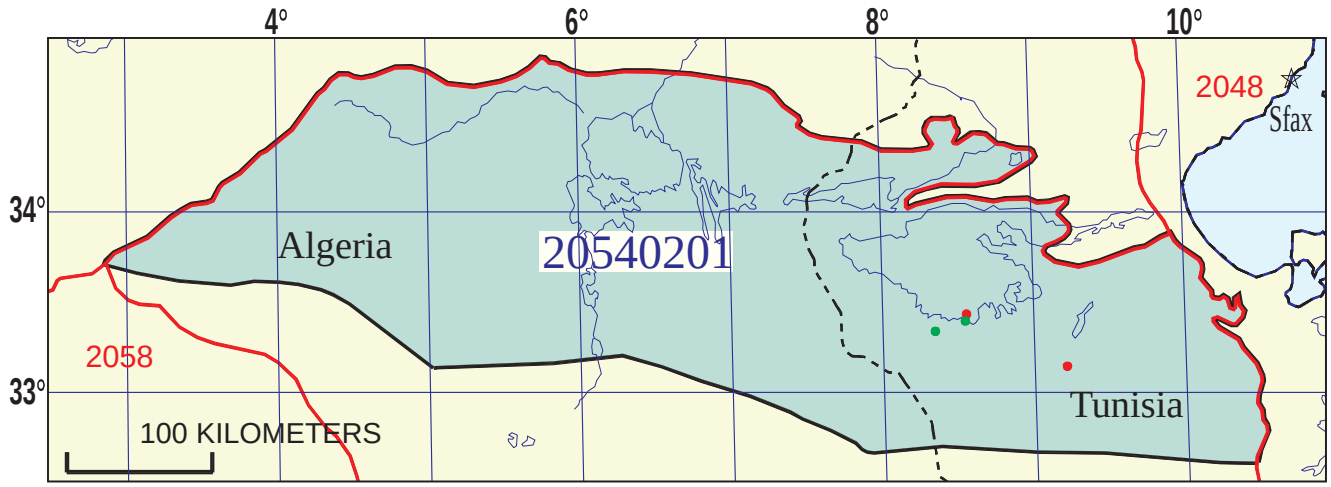


Tanezzuft-Melrhir Structural/Stratigraphic Assessment Unit - 20540201

EXPLANATION

- Hydrography
- Shoreline
- 2054 Geologic province code and boundary
- Country boundary
- Gas field centerpoint
- Oil field centerpoint
- 20540201 Assessment unit code and boundary

Projection: Robinson. Central meridian: 0

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

Date:……..	6/16/98		
Assessment Geologist:……..	T.R. Klett		
Region:……..	Middle East and North Africa	Number:	2
Province:……..	Trias/Ghadames Basin	Number:	2054
Priority or Boutique……	Priority		
Total Petroleum System:……	Tanezzuft-Melrhir	Number:	205402
Assessment Unit:……..	Tanezzuft-Melrhir Structural/Stratigraphic	Number:	20540201
* Notes from Assessor			

CHARACTERISTICS OF ASSESSMENT UNIT

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

What is the minimum field size?……. 1 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: 2 Gas: 2

Established (>13 fields)	Frontier (1-13 fields)	Hypothetical (no fields)
	X	

Median size (grown) of discovered oil fields (mmboe):
1st 3rd 1.4 2nd 3rd 7.2 3rd 3rd

Median size (grown) of discovered gas fields (bcfg):
1st 3rd 35.9 2nd 3rd 143.7 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.	31	max no.	81
Gas fields:……min. no. (>0)	2	median no.	15	max no.	38

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	1	median size	16	max. size	2488
Gas in gas fields (bcfg):…… min. size	6	median size	70	max. size	3144

Assessment Unit (name, no.)
Tanezzuft-Melrhir Structural/Stratigraphic, 20540201

AVERAGE RATIOS FOR UNDISCOVERED FIELDS, TO ASSESS COPRODUCTS

(uncertainty of fixed but unknown values)

Oil Fields:	minimum	median	maximum
Gas/oil ratio (cfg/bo)……	686	1372	2058
NGL/gas ratio (bngl/mmcfg)……	20	40	60

Gas fields:	minimum	median	maximum
Liquids/gas ratio (bngl/mmcfg)……	36	72	108
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)……	39	42	45
Sulfur content of oil (%)……			
Drilling Depth (m) ……	2200	3100	4000
Depth (m) of water (if applicable)……			

Gas Fields:	minimum	median	maximum
Inert gas content (%)……			
CO_2 content (%)……			
Hydrogen-sulfide content (%)……			
Drilling Depth (m)……	2200	3200	4200
Depth (m) of water (if applicable)……			

Assessment Unit (name, no.)
Tanezzuft-Melrhir Structural/Stratigraphic, 20540201

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

1. Algeria represents 64 areal % of the total assessment unit

Oil in Oil Fields:	minimum	median	maximum
Richness factor (unitless multiplier):……			
Volume % in parcel (areal % x richness factor):…		64	
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):…		64	
Portion of volume % that is offshore (0-100%)……		0	

2. Tunisia represents 36 areal % of the total assessment unit

Oil in Oil Fields:	minimum	median	maximum
Richness factor (unitless multiplier):……			
Volume % in parcel (areal % x richness factor):…		36	
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):…		36	
Portion of volume % that is offshore (0-100%)……		0	

3. Province 2054 represents 99 areal % of the total assessment unit

Oil in Oil Fields:	minimum	median	maximum
Richness factor (unitless multiplier):……			
Volume % in parcel (areal % x richness factor):…		99	
Portion of volume % that is offshore (0-100%)……		0	

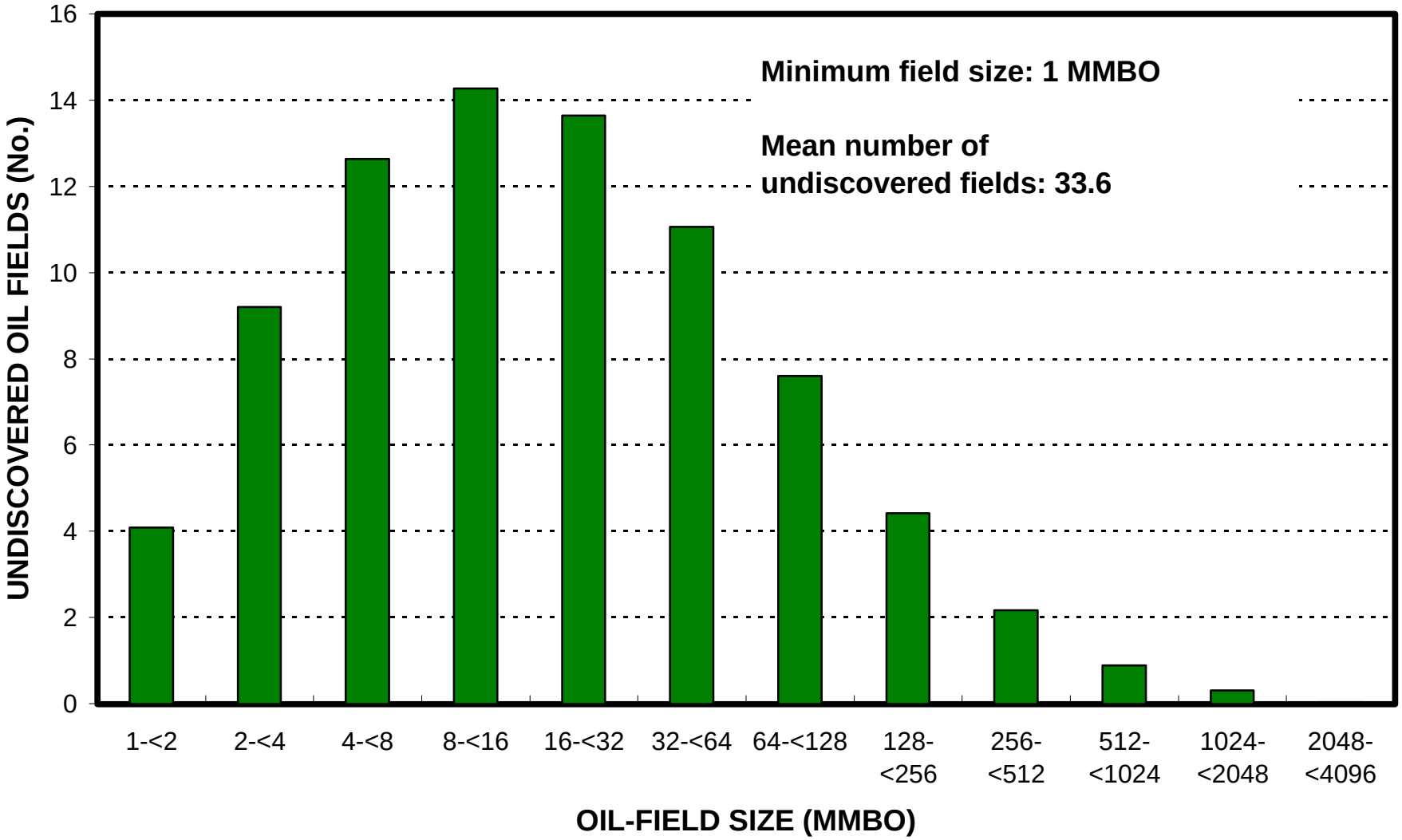
Gas in Gas Fields:	minimum	median	maximum
Richness factor (unitless multiplier):……			
Volume % in parcel (areal % x richness factor):…		99	
Portion of volume % that is offshore (0-100%)……		0	

4. Province 2048 represents 1 areal % of the total assessment unit

Oil in Oil Fields:	minimum	median	maximum
Richness factor (unitless multiplier):……			
Volume % in parcel (areal % x richness factor):…		1	
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):…		1	
Portion of volume % that is offshore (0-100%)……		0	

Tanezzuft-Melrhir Structural/Stratigraphic, AU 20540201
Undiscovered Field-Size Distribution



Tanezzuft-Melrhir Structural/ Stratigraphic, AU 20540201
Undiscovered Field-Size Distribution