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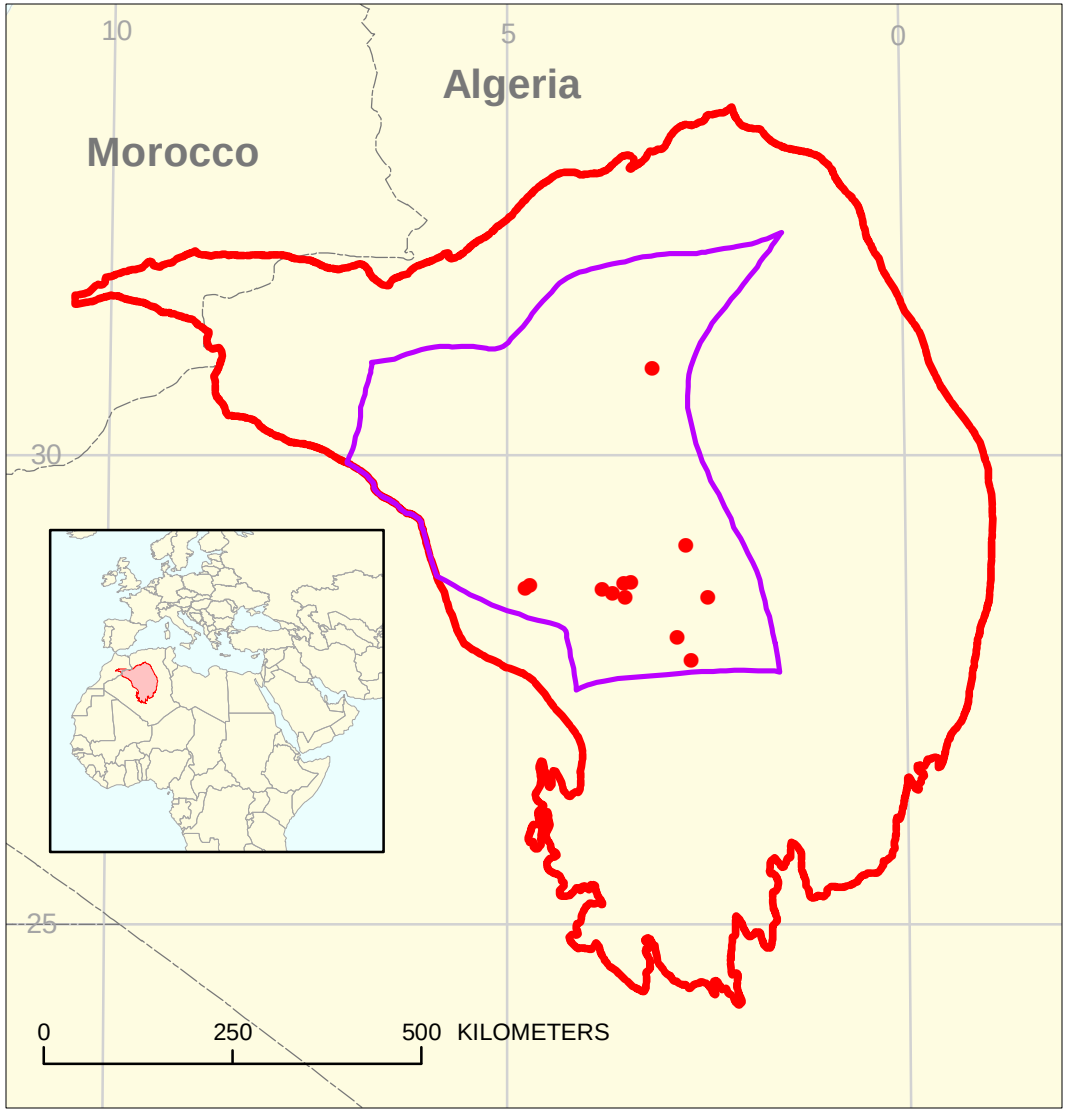
Tanezzuft-Timimoun Structural/Stratigraphic Assessment Unit 20580101



Tanezzuft-Timimoun Structural/Stratigraphic Assessment Unit 20580101

Grand Erg/Ahnet Basin Geologic Province 2058

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: Grand Erg/Ahnet Basin (2058) **GEOLOGIST:** T.R. Klett

TOTAL PETROLEUM SYSTEM: Tanezzuft-Timimoun (205801)

ASSESSMENT UNIT: Tanezzuft-Timimoun Structural/Stratigraphic (20580101)

DESCRIPTION: This total petroleum system and corresponding assessment unit coincide with the Timimoun Basin, bounded on the north by the Tilrhemt-Oued Namous-Maharez structural axis; on the east by the Idjerane-M'Zab structural axis; on the south by the Djoua Saddle, Azzene High, and Ougarta Range; and on the west by the Ensellement Beni Abbes (or Beni Abbes Saddle).

SOURCE ROCKS: The primary source rocks are Silurian (laterally equivalent to the Tanezzuft Formation) and Middle to Upper Devonian mudstone.

MATURATION: Petroleum is presumed to have been generated during the Carboniferous, but was halted during uplift associated with Hercynian deformation. A later phase of dry gas generation may have occurred in the Late Triassic.

MIGRATION: Migration and charge occurred during the early stages of Hercynian deformation, prior to major uplift and erosion. Petroleum migrated vertically along faults or fractures and laterally into adjacent or juxtaposed reservoirs.

RESERVOIR ROCKS: The known reservoir rocks are Ordovician marine and glacial sandstone, Devonian shallow marine sandstone, and Carboniferous deltaic to marine sandstone.

TRAPS AND SEALS: Most of the known accumulations are in high-amplitude anticlines and faulted anticlines. Intraformational Paleozoic marine mudstone is the primary seal.

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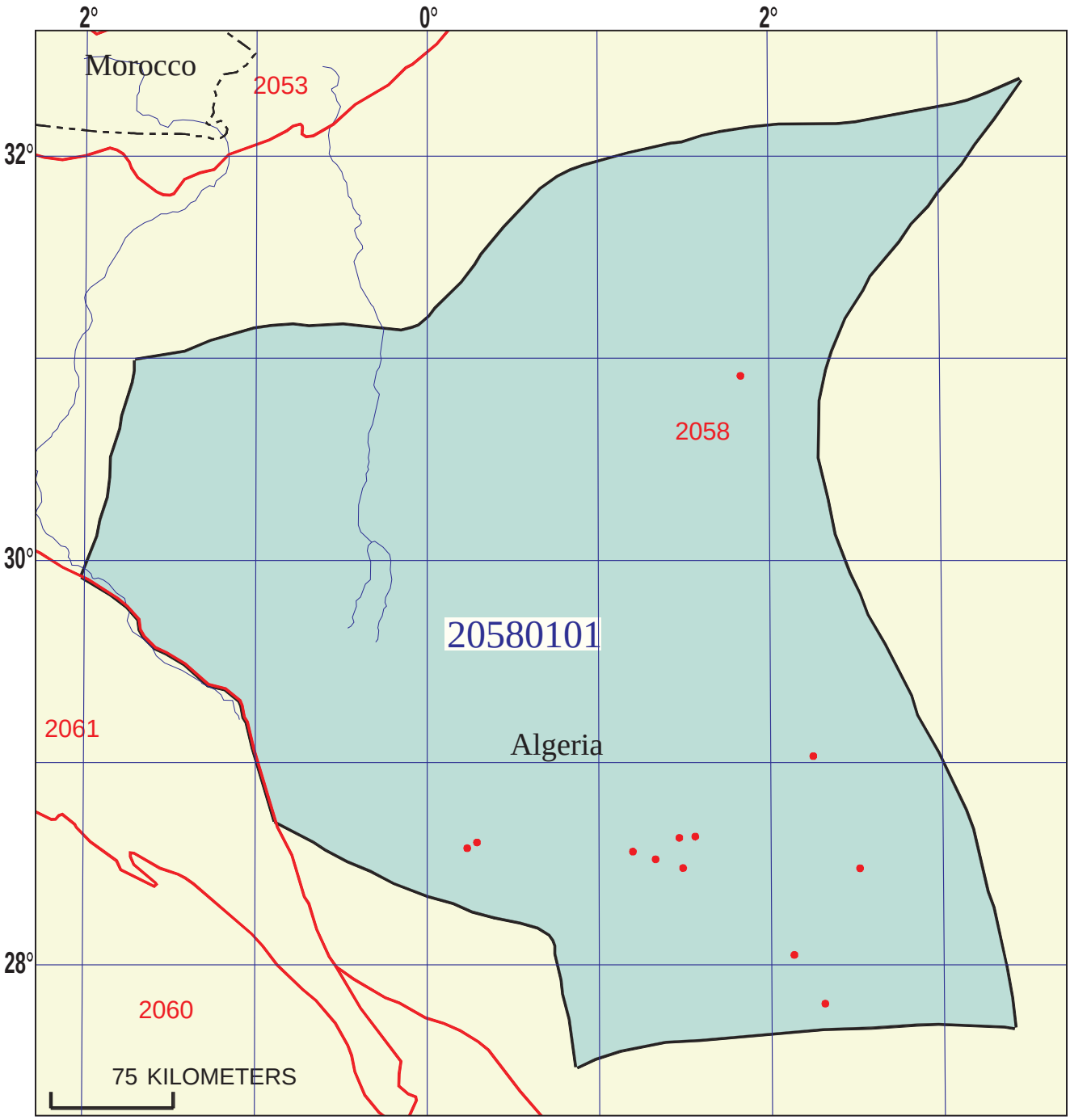
Logan, P., and Duddy, I., 1998, An investigation of the thermal history of the Ahnet and Reggane Basins, Central Algeria, and the consequences for hydrocarbon generation and accumulation, *in* Macgregor, D.S., Moody, R.T.J., and Clark-Lowes, D.D., eds., Petroleum geology of North Africa: London, Geological Society, Special Publication No. 132, p. 131-155.



Tanezzuft-Timimoun Structural/Stratigraphic Assessment Unit - 20580101

EXPLANATION

- Hydrography
- Shoreline
- 2058 — Geologic province code and boundary
- Country boundary
- Gas field centerpoint
- Oil field centerpoint
- 20580101 — Assessment unit code and boundary

Projection: Robinson. Central meridian: 0

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

Date:……..	12/4/98		
Assessment Geologist:……..	T.R. Klett		
Region:……..	Middle East and North Africa	Number:	2
Province:……..	Grand Erg/Ahnet Basin	Number:	2058
Priority or Boutique:……..	Priority		
Total Petroleum System:……	Tanezzuft-Timimoun	Number:	205801
Assessment Unit:……..	Tanezzuft-Timimoun Structural/Stratigraphic	Number:	20580101
* Notes from Assessor			

CHARACTERISTICS OF ASSESSMENT UNIT

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

What is the minimum field size?……. 4 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: 10
Established (>13 fields) _____ Frontier (1-13 fields) X 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 943 2nd 3rd 139 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)	1	median no.	2	max no.	4
Gas fields:……	min. no. (>0)	4	median no.	10	max no.	20

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	4	median size	10	max. size	200
Gas in gas fields (bcfg):……	min. size	24	median size	60	max. size	1500

Assessment Unit (name, no.)
Tanezzuft-Timimoun Structural/Stratigraphic, 20580101

AVERAGE RATIOS FOR UNDISCOVERED FIELDS, TO ASSESS COPRODUCTS

(uncertainty of fixed but unknown values)

Oil Fields:	minimum	median	maximum
Gas/oil ratio (cfg/bo)……	1875	3750	5625
NGL/gas ratio (bngl/mmcfg)……	30	60	90

Gas fields:	minimum	median	maximum
Liquids/gas ratio (bngl/mmcfg)……	24	48	72
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	
Sulfur content of oil (%)……			
Drilling Depth (m) ……	430	1500	3000
Depth (m) of water (if applicable)……			

Gas Fields:	minimum	median	maximum
Inert gas content (%)……			
CO_2 content (%)……			
Hydrogen-sulfide content (%)……			
Drilling Depth (m)……	1500	2500	3500
Depth (m) of water (if applicable)……			

Assessment Unit (name, no.)
Tanezzuft-Timimoun Structural/Stratigraphic, 20580101

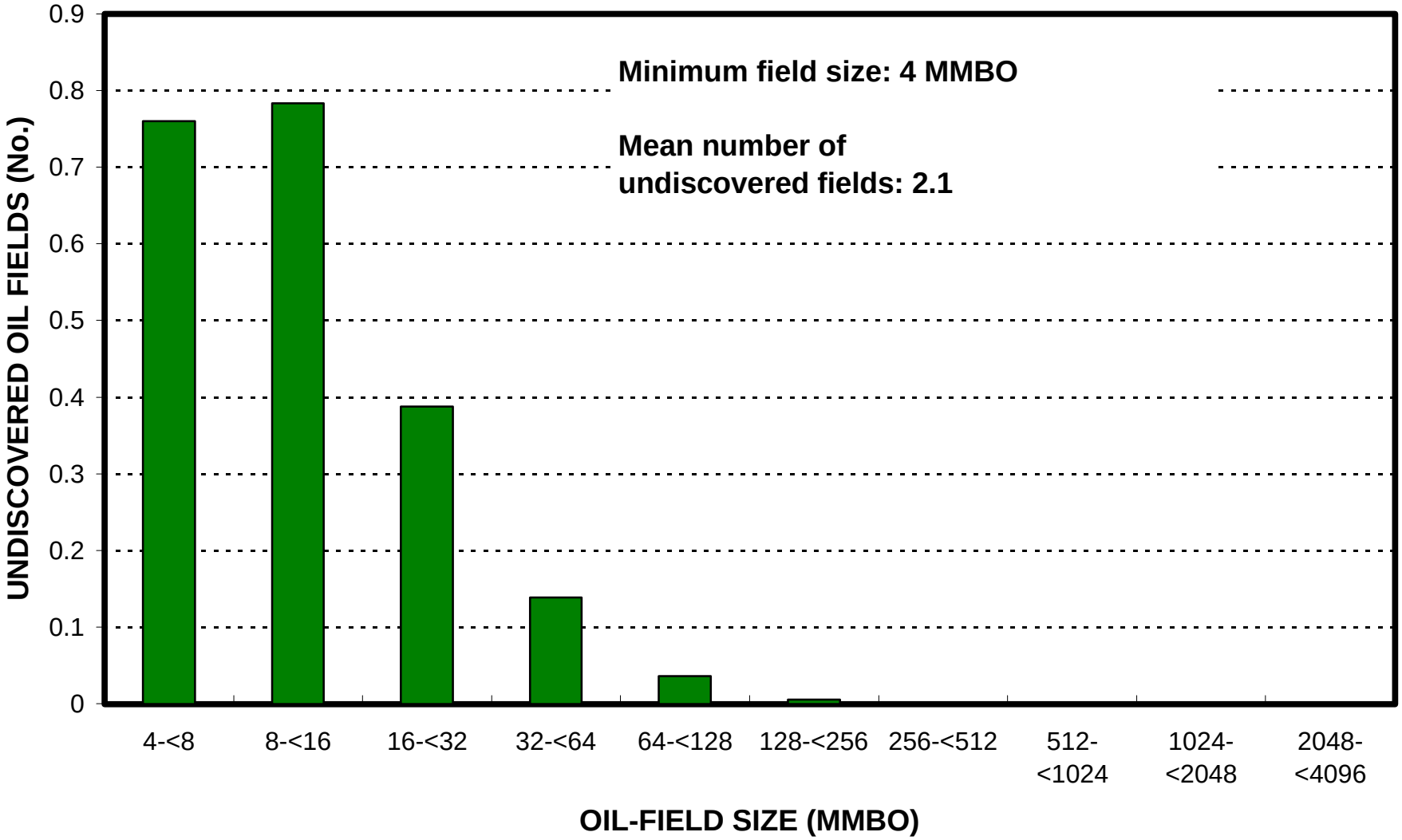
ALLOCATION OF UNDISCOVERED RESOURCES IN THE ASSESSMENT UNIT TO COUNTRIES OR OTHER LAND PARCELS (uncertainty of fixed but unknown values)

1. Algeria 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):…		100	
Portion of volume % that is offshore (0-100%)……		0	

Tanezzuft-Timimoun Structural/Stratigraphic, AU 20580101
Undiscovered Field-Size Distribution



Tanezzuft-Timimoun Structural/Stratigraphic, AU 20580101
Undiscovered Field-Size Distribution