GEOLOGICAL MAP OF KENYA

with

BOUGUER GRAVITY CONTOURS

Published by the Ministry of Energy and Regional Development of Kenya

Scale : 1 : 1,000,000

GEOLOGICAL MAP
OF
KENYA
with Bouguer gravity contours

This map takes part of a set of three maps at 1 : 1 million Scale : Geological Map, and Geostructural Map, Bouguer Gravity Map on geological background which can be obtained from the Ministry of Energy and Regional Development – Nairobi – Kenya

Petroleum Exploration Promotion Project, World Bank Assistance

Prepared by Beicip – Rueil-Malmaison – France

Edition 1987

LEGEND

WESTERN KENYA

- Qz — Holocene. *Alluvium,* evaporitic depression
- Qz — Holocene. *Colluvial deposits, pebble sheets and red soils*
- Qrv — Holocene. *Basalt flows, pyroclastics, volcanic soils*
- Qtv — Pleistocene. *Trachytes, basalts and pyroclastics*
- PQz — Plio-Pleistocene. *Sediments of Turkana area*
- Pv — Pliocene. *Trachytes, phonolites, basalts.* β : *Rhyolites*
- N : Neogene. *Undifferentiated sediments interbedded in volcanics. Sands, shales, tuffs* Partly : *Turkana Grits (part) = Tiati Grits*
- Mn — Upper Miocene Mn1. *Phonolites, trachytes and olivine basalts*
- Mn — Upper Oligocene-Lower Miocene Mn. *Augite basalts (Turkana) and nephelinites (Elgon and others)*

EASTERN KENYA

- Qz — Holocene. *Alluvium, dune, beaches*
- Qz — Holocene. *Colluvial deposits, red soils, old surface (Garissa)*
- Qz Qtm — Pleistocene. *Sands,* Qtm : *marine deposits*
- P — Pliocene. *Sandstones, sands (marine to continental to the North)*
- M — Miocene. *Marls, limestones, sands*

NORTH CENTRAL AND NORTHWESTERN AREA (Anza Basin)

- JK — Upper Jurassic-Cretaceous. *Turkana Grits (part)*
- J — Jurassic. *Condensate undifferentiated sequence of sandstones, limestones (Matasade, Dogopicha, Bule Burgabo)*

NORTH EASTERN KENYA

- Ks-3 — 66 my — Cenomanian to Maastrichtian. *Marehan Series. Sandstones, shales (continental) with marine limestones (Mustahil of Ethiopia)*
- JKt — 150 my — Tithonian to Neocomian. *Mandera Series. Dolomites, shales, sandstones (Lower Gorrahei of Ethiopia)*
- Jm — Kimmeridgian-Tithonian. *Dense limestone with an intermediate shale member (Gabredare of Ethiopia)*
- Jo-Ja — Bajocian to Oxfordian. *Mainly limestones oolitic or not with shales and sandstones (Hamanlei-Urandab of Ethiopia)*
- Jt — 183 my — Toarcian. *Didimtu. Non oolitic limestone*

Daua series

Continuous sedimentation between Triassic and Jurassic in basin axis (Mombasa-Mandera, subsurface data) variable hiatus on border (outcrops) with transgression westward.

MOMBASA AREA (SE)

- Kt — 119 my — Neocomian. *Shales and limestone (Freretown)*
- Jo-3 — 183 my — Bajocian-Upper Jurassic. *Posidonia shales and Kambe oolitic limestone in Jo, thick sequence of shales in Jt*

NORTH EASTERN KENYA AND MOMBASA AREA

- TJt — 200 my — Upper Triassic-Lower Lias. *Mansa Guda (NE) / Mazeras (SE) Coarse grained sandstones*
- T — Triassic. *Mariakani. Sandstones, shales*
- PT — Permian-Lower Triassic. *Maji-ya-Chumvi. Shales, siltstones*
- CP — 300 my — Upper Carboniferous-Lower Permian. *Taru Grits. Tillites, grits, shales*
- CJ : *Duruma Series of undifferentiated Karroo*

METAMORPHIC BASEMENT OF KENYA

- PA — 650 my — Precambrian A. *Bukoban. Quartzites and volcanics*
- PDb — 1 300 my — Precambrian Db. *Kavirondian, Embue. Grits and mudstones*
- PDz — 2 500 my — Precambrian Dz. *Nyanzian. Rhyolites, andesites, basalts and greywackes*
- PD — 3 000 my — Precambrian D. *Mozambique belt. Quartzites, micaschists, biotite and hornblende gneiss, granitoid gneiss, amphibolites, migmatites, syntectonic granites.*
- PDU — 3 300 my — *Crystalline limestones, intercalations in PD (Moz. belt)*

Nyanzian area

Mozambique belt with Mozambique rejuvenation in Precambrian A, 650 my

INTRUSIVES

Syenite — Tertiary — Cretaceous — Precambrian

Granites, Granodiorites, Granites — γPA Precambrian A — γPC Precambrian C, DC — γP Undifferentiated Precambrian

Basic rocks (Precambrian to Tertiary), C : carbonatites (Tertiary)

Ø : Diatremes

CENOZOIC — QUATERNARY — NEOGENE — CRETACEOUS — JURASSIC — MESOZOIC — TRIASSIC — PALEOZOIC — CARBONI-FEROUS PERMIAN — PROTE-ROZOIC — ARCHEAN — PRECAMBRIAN

OTHER SYMBOLS

- Principal Town, other town, village
- River
- Bathymetry in metres
- Altitude in metres
- Geological boundary definite, inferred
- Fault (field data)
- Fault (Photogeology) or lineament (Landsat)
- Overthrust
- Anticline axis, overturned
- Syncline axis, overturned
- Trend of foliation of metamorphic rocks
- Caldera

SCALE : 1 : 1,000,000

10 0 10 20 30 40 50 60 70 80 90 100 km

Topographic base : Ellipsoid Clarke 1880 – UTM Projection

This map is not considered as an authority on the delineation of international boundaries

BOUGUER GRAVITY ANOMALY

West of 37° 30' Long.

Contours by Beicip every 5 mgl from station data recorded on tapes by the Leicester University. All values are negative.

East of 37° 30' Long.

Contours every 10 mgl from Bouguer Map of Kenya, 1982 at 1 : 1,000,000, Leicester University. Modified by Beicip with additionnal information in the Garissa-Wajir area and offshore area.

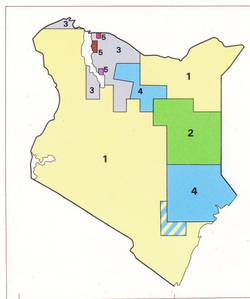
Note : Data compiled from observations listed in Swain and Khan, 1977, "Kenya, a catalogue of gravity measurements" by Leicester University (same authors) using a density of 2.67, datum IGSN 1971 and the 1967 gravity formula.

-40 Contour in mgal (negative value when not specified)

Evolution of the sedimentary basins of Kenya

Time \ Basin	LAMU Offshore	LAMU West	MANDERA East	MANDERA West	ANZA South	ANZA North	RIFT VALLEY North	RIFT VALLEY South
PRESENT					FAILED		ACTIVE RIFT (Initial rift sequence)	
TERTIARY upper		PASSIVE MARGIN BASIN STAGE			RIFTING STAGE (Initial rift sequence)			
TERTIARY lower				PLATFORM BASIN STAGE				
CRETACEOUS upper			Post-rift sequence					
CRETACEOUS lower		break-up		transgression		PLATFORM		
JURASSIC upper			evaporitic phase					
JURASSIC lower		Triassic						
TRIASSIC upper			transgression					
TRIASSIC lower		RIFTING STAGE		Initial rift sequence				
PERMIAN CARBONIFEROUS								

? : no or few deposits



MAIN SOURCES OF COMPILATION

1 – Geological maps of the Geological Survey of Kenya at various scales

2 – Photogeological map, field controlled, Chevron Co., 1 : 250,000

3 – Landsat interpretation, Beicip

4 – Topographic maps of Survey of Kenya at 1 : 250,000 with complementary geological information

5 – Various local sources and various publications for correlation and geochronology

Cartographie : B.E.I.C.I.P. – 92500 Rueil-Malmaison – France

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