

NORTH PUTUMAYO BASIN



Oil Seeps all Over
the Basin... a
Petroleum System
at Work (!)

Colombia

2005

2006

Petroleum system

■ **Hydrocarbon Evidence:** Oil seeps and shows in cuttings indicate the presence of an active petroleum system.

■ **Reservoirs:** Upper Eocene sandstones (Losada, Mirador and Pepino Formations) are the main reservoirs in this basin. Average porosity calculated from logs in the Payara-1 well is around 11%.

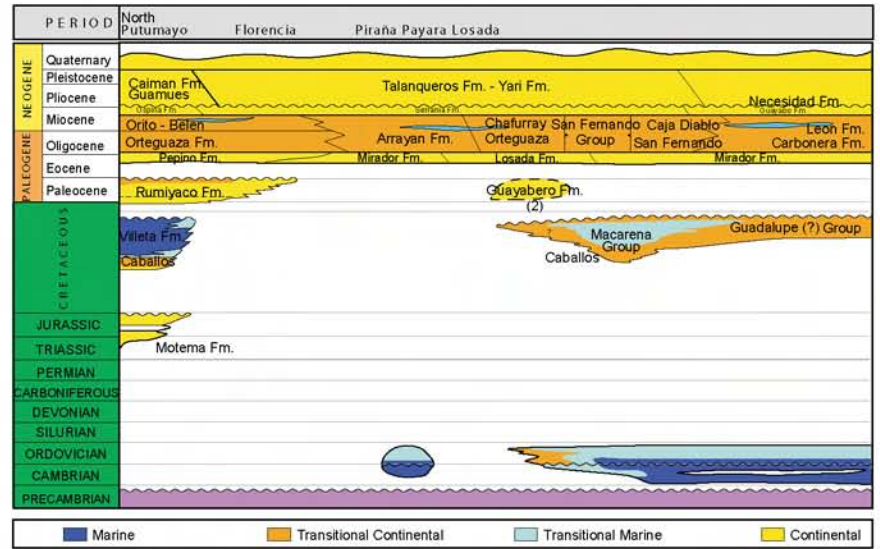
■ **Traps:** Two pulses of uplift of the Garzon masiff in the northern part of the basin have generated traps such as: drag folds involving basement, asymmetrical anticlines by tectonic inversion, fault-propagation folds, and anticlines associated to thrusting. Eocene pinch-out over basement or Paleozoic highs facilitate the development of stratigraphic traps.

■ **Sources:** Cretaceous source rock (Macarena Group) has been recognised in geological field studies and well samples (Uribe-1). Geochemical studies indicate the existence of shales rich in organic matter, with TOC over 4%, kerogene type II and III, and Ro 0.75 to 0.83.

■ **Seals:** Oligocene to Miocene claystone units (Arrayan formation) represent regional seals with gross thickness near to 1,000 ft.

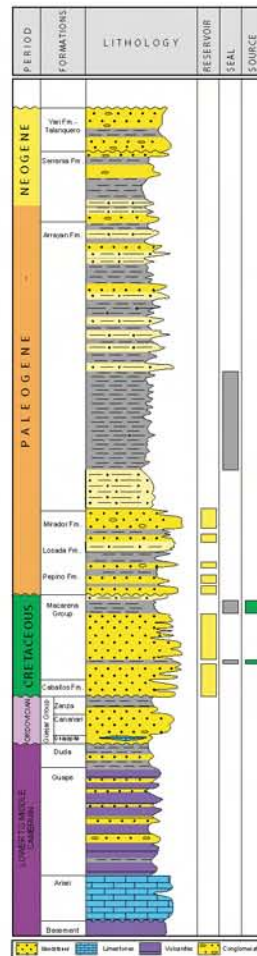
■ **Migration and Timing:** Geochemical analyses in Cretaceous rocks indicate a highly mature organic matter and oil expulsion processes, that started in the Miocene and continues up to date. Two migration pathways are proposed for the basin: one from the west, (Upper Magdalena basin) and a second, from pods of active source rock within the basin. The last Andean orogenic episode produced re-migration of oil from old traps.

Chronostratigraphic Chart



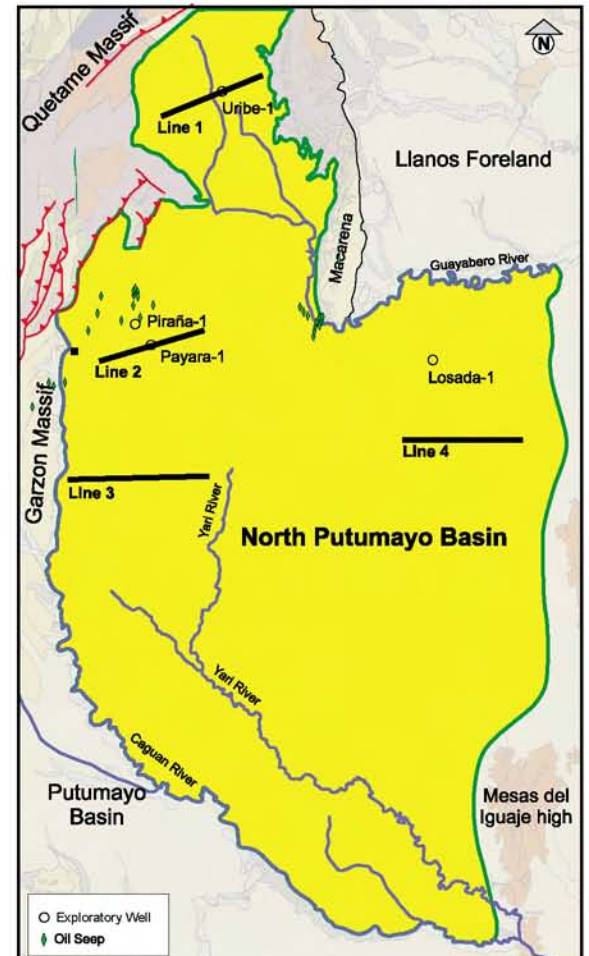
From ICP, 1997

Petroleum System Chart



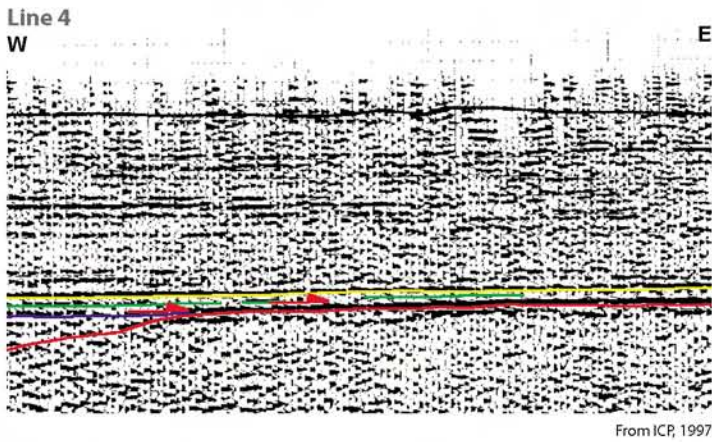
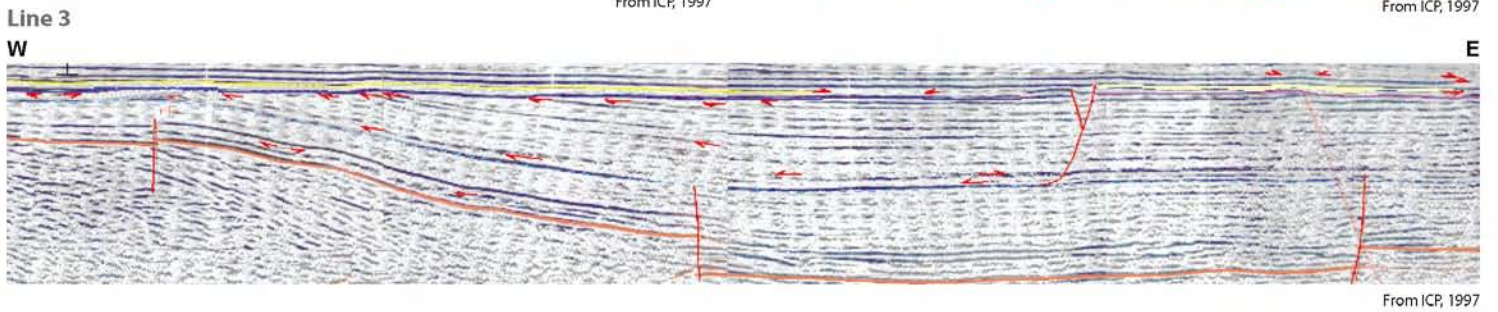
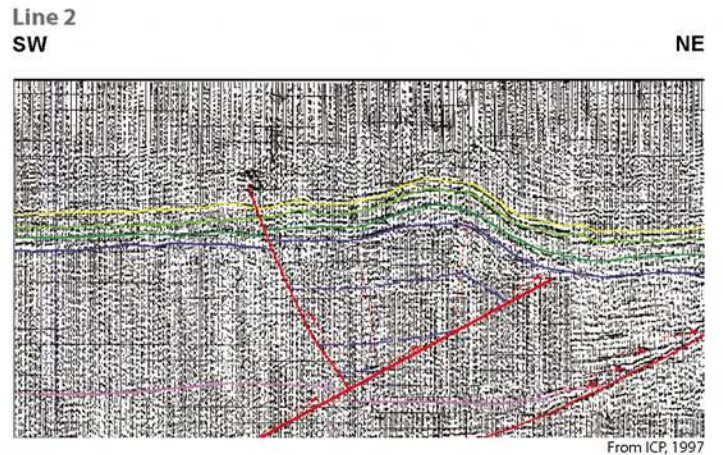
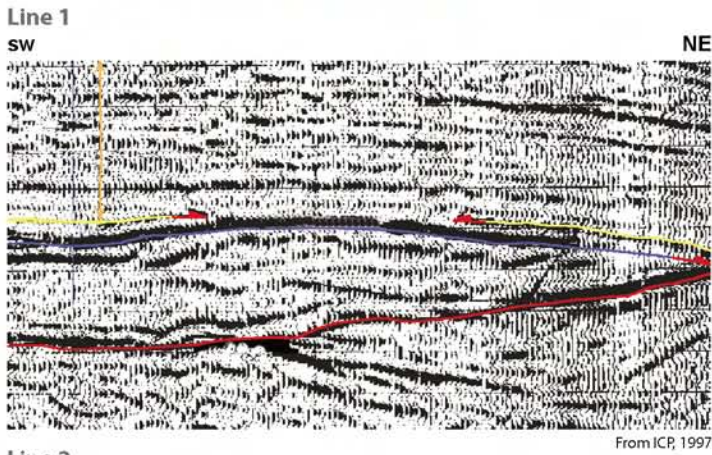
Modified Ecopetrol, 1999

Exploratory Wells and Oil Seeps Map



From Barrero, D. and Martinez, J., 2005

Seismic Expression of the Basin



Oil Seeps

Macarena Group



From ICP, 1997

Losada Formation

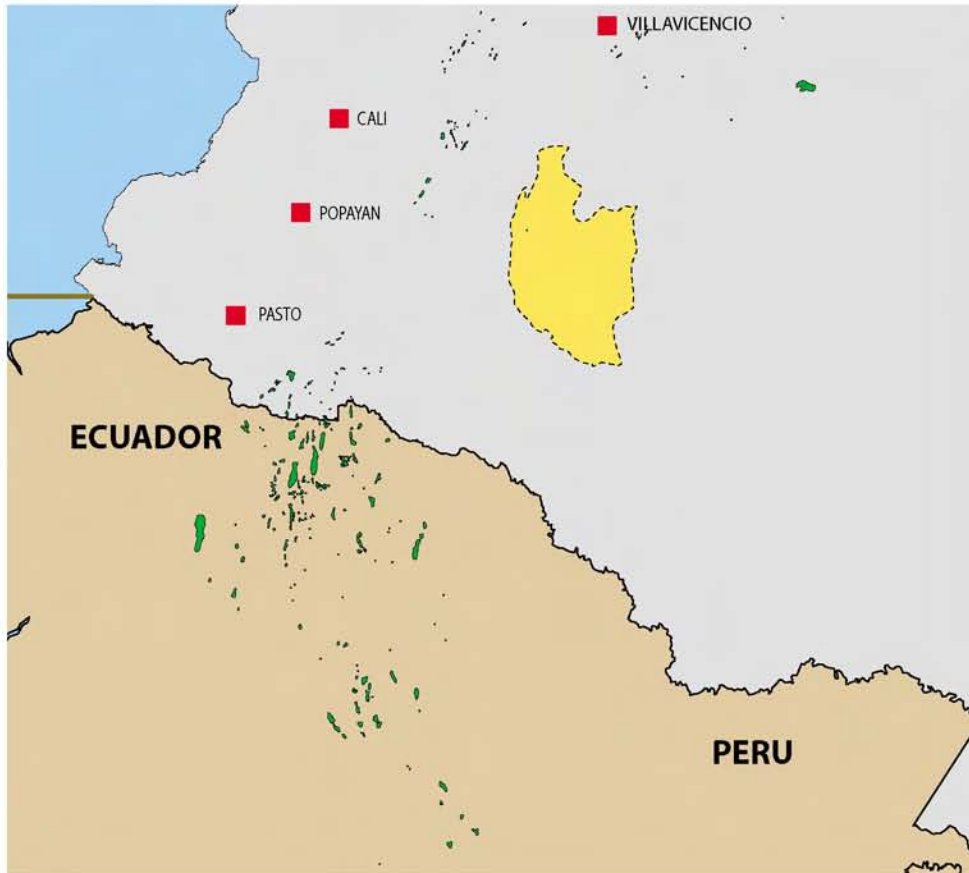


From ICP, 1997

Prospectivity

Although oil has not been discovered in the basin, there is great potential for exploring hydrocarbon accumulations in structural and stratigraphic traps.

Basin Location



Basin Location

The North Putumayo basin is a frontier area of approximately 74,000 km². Located south west of the Sierra de la Macarena uplift, and east of the Garzon massif. Four wildcats have been drilled with very good oil shows. The basin is the result of transtensional events in Late Cretaceous epoch.

HIGHLIGHTS

Area **74,000 km²**
18,300,000 acres

Basin Type **Transtensional**

Exploratory wells **4**

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Ecopetrol S.A.



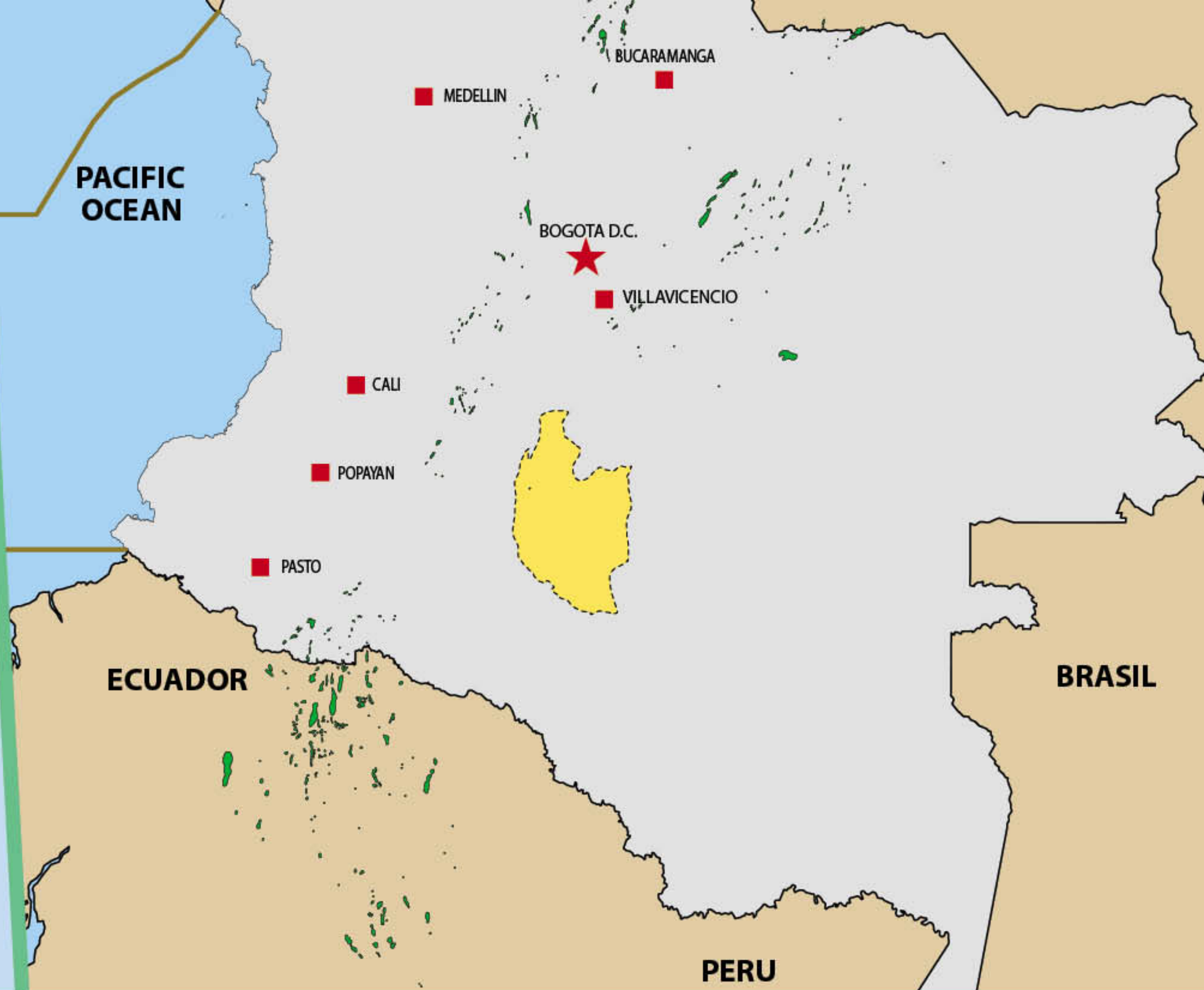
Agencia Nacional de Hidrocarburos
República de Colombia

Contact Information

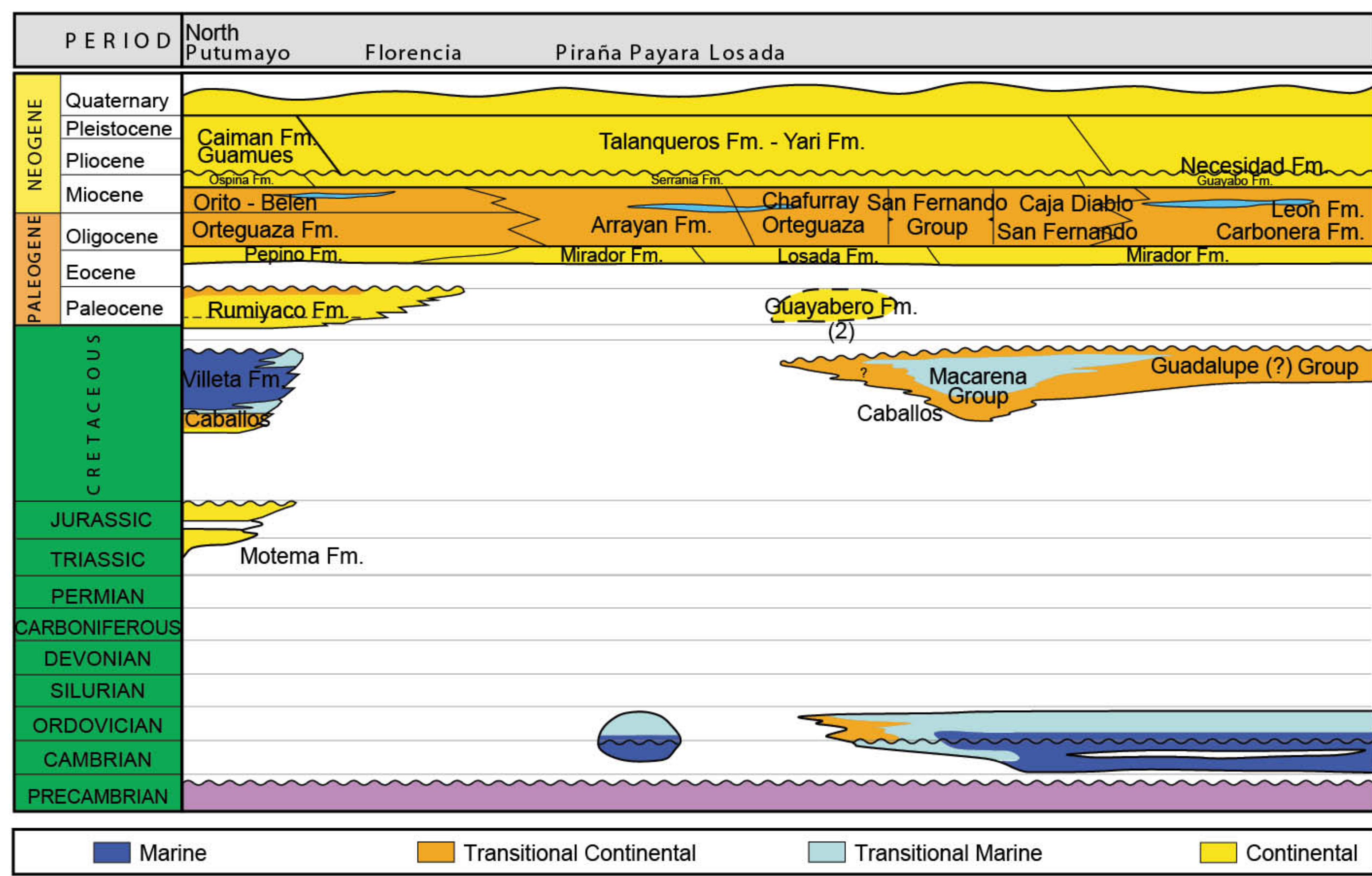
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North Putumayo Basin

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Chronostratigraphic Chart



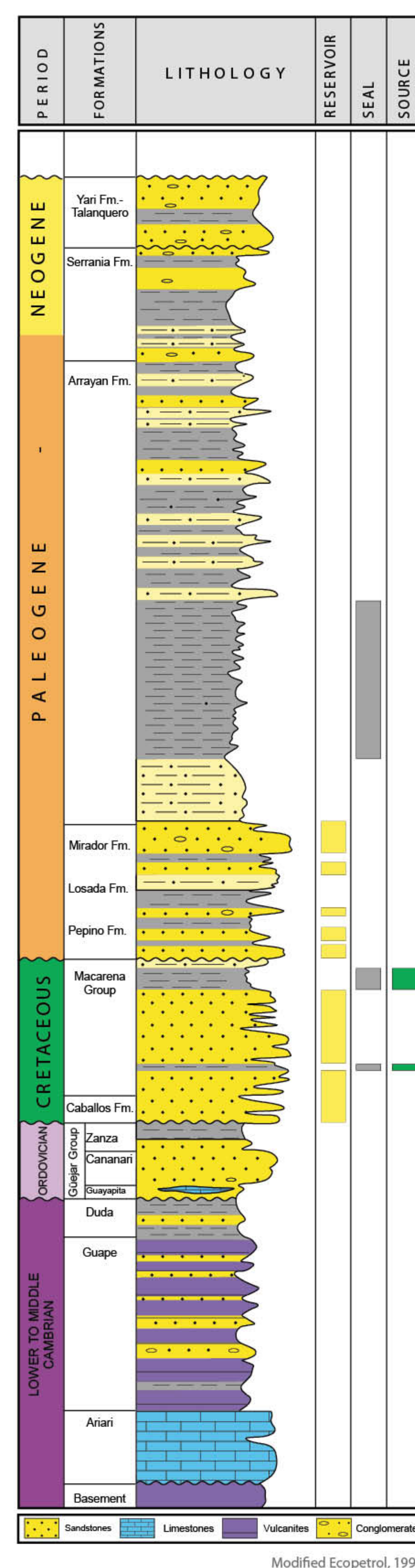
Highlights

Area **174,000 km²**
18,300,000 acres

Basin Type **1 Transtensional**

Exploratory Wells **14**

Petroleum System Chart



Oil Seeps

Macarena Group



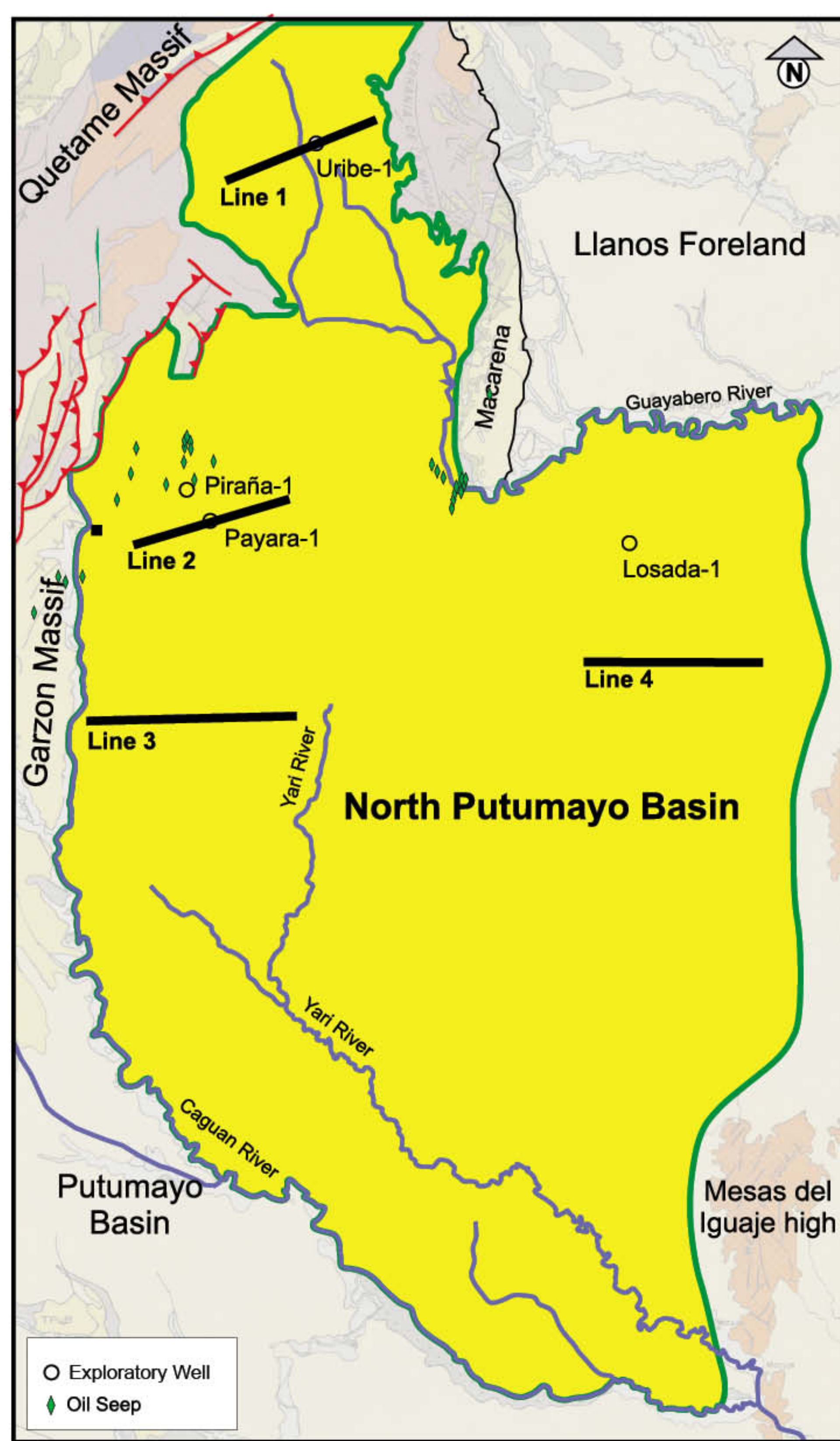
From ICP, 1997

Losada Formation



From ICP, 1997

Exploratory Wells and Oil Seeps Map

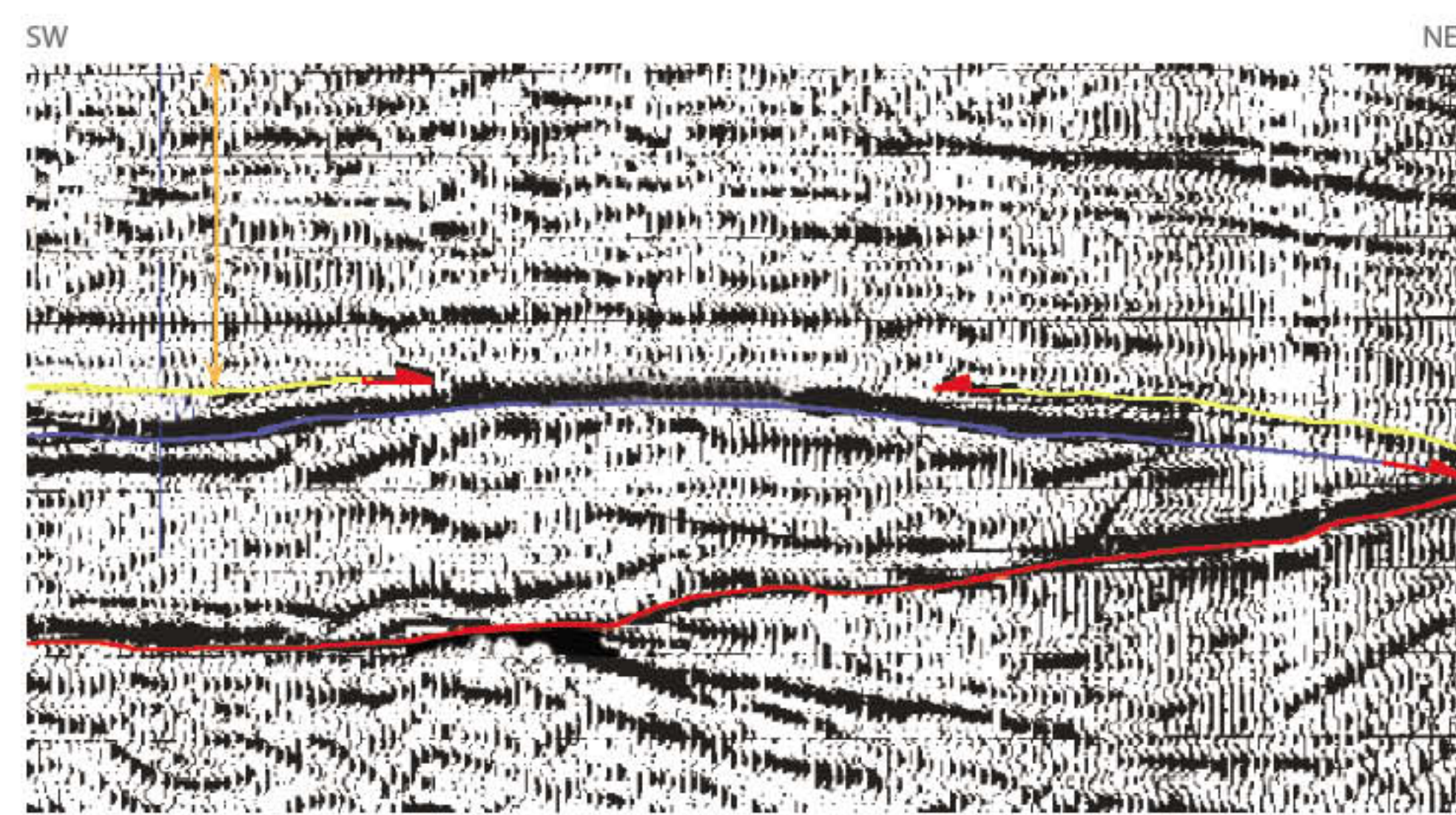


Prospectivity

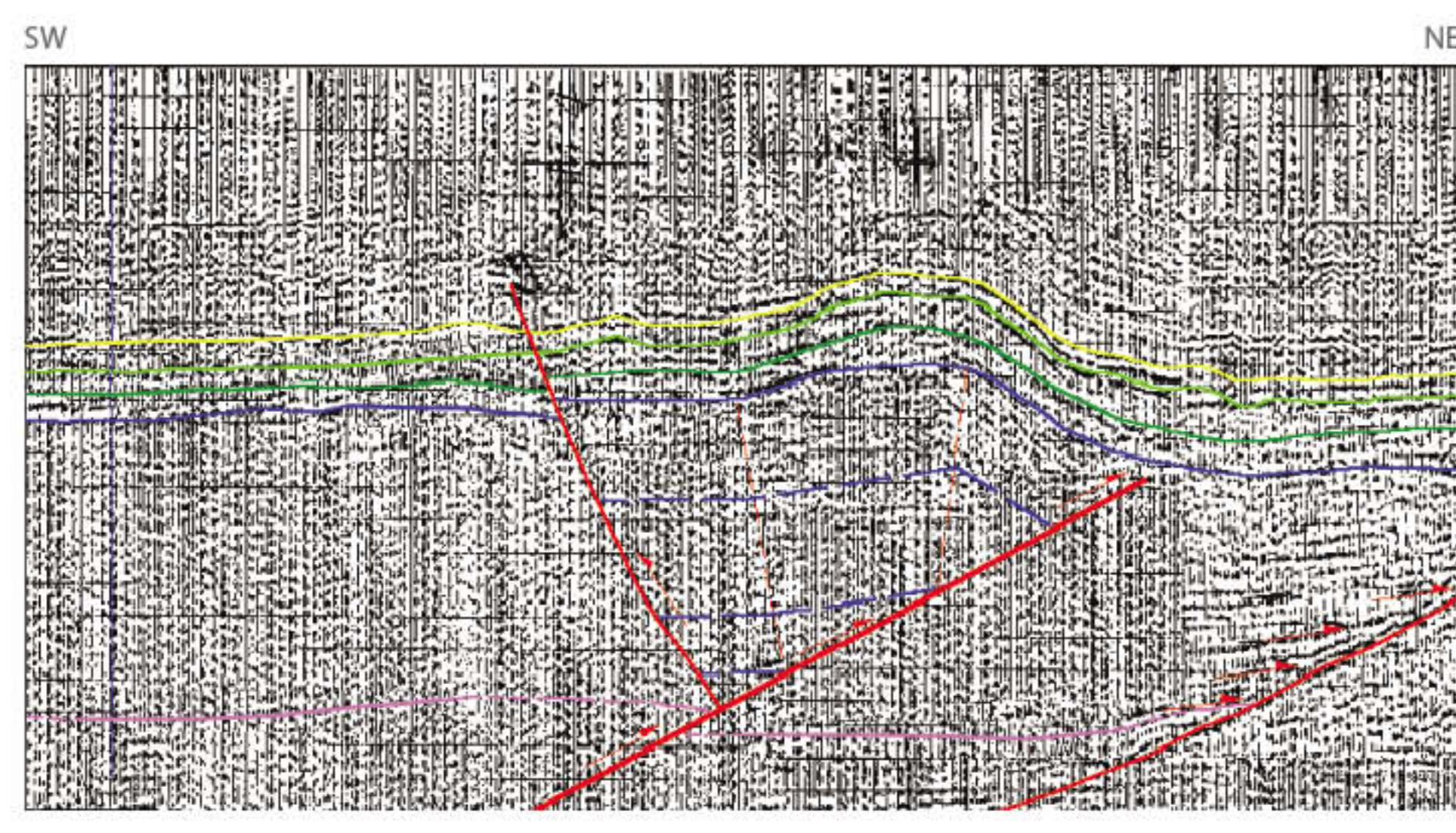
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Seismic Expression of the Basin

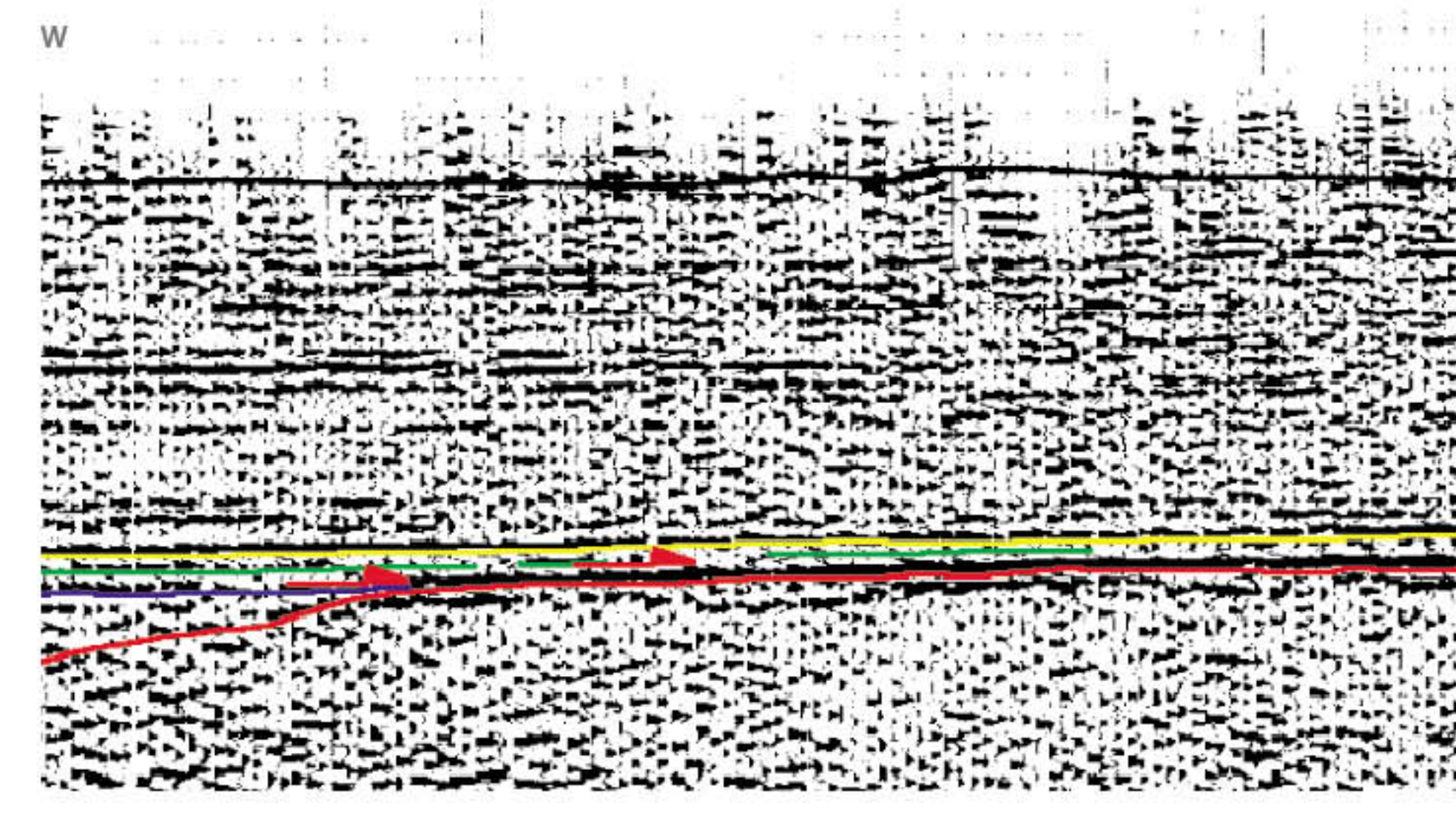
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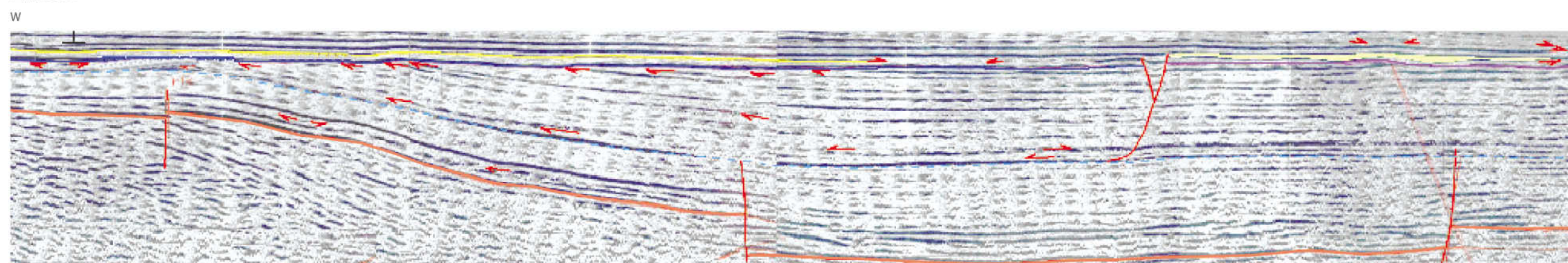
Line 2



Line 4



Line 3



Agencia Nacional de Hidrocarburos
República de Colombia

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