

# RONDA

## COLOMBIA 2021

**PUTUMAYO BASIN**

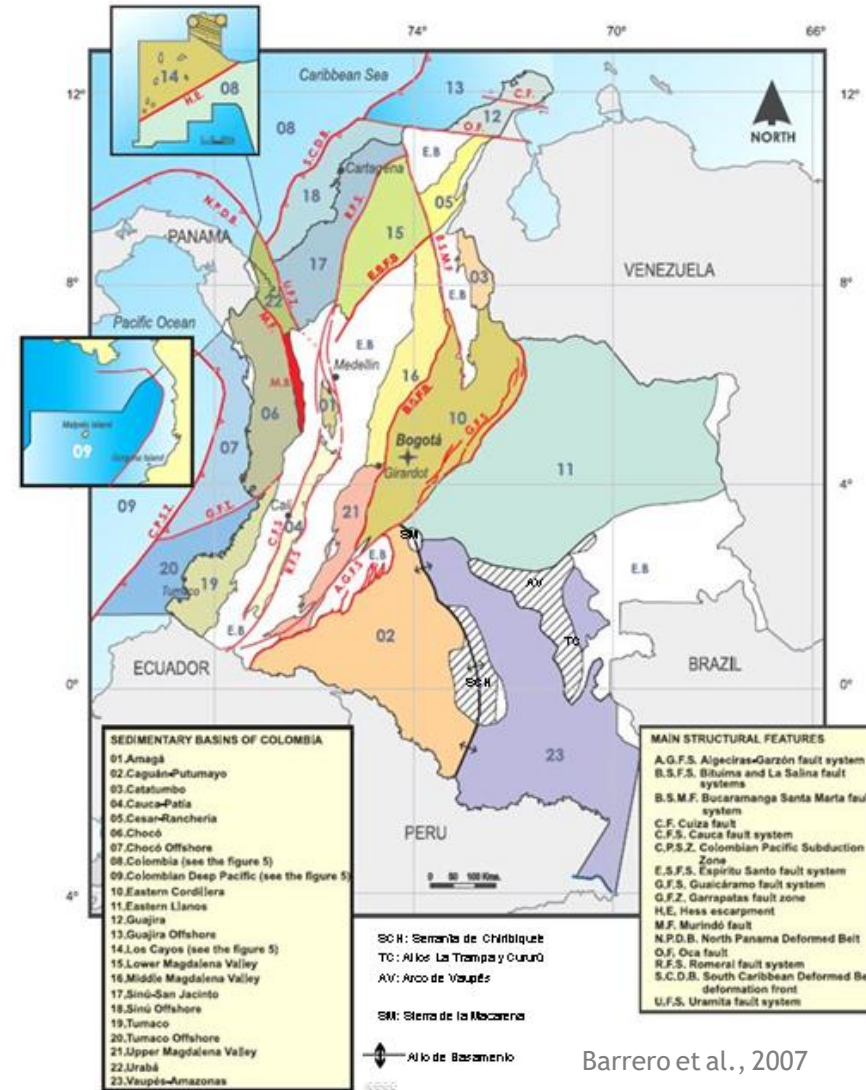
July 30<sup>TH</sup> 2021

## CONTENT

- ✓ Structural and Stratigraphic Regional Framework
- ✓ Seismic and Wells Regional Interpretation
- ✓ Plays Definition

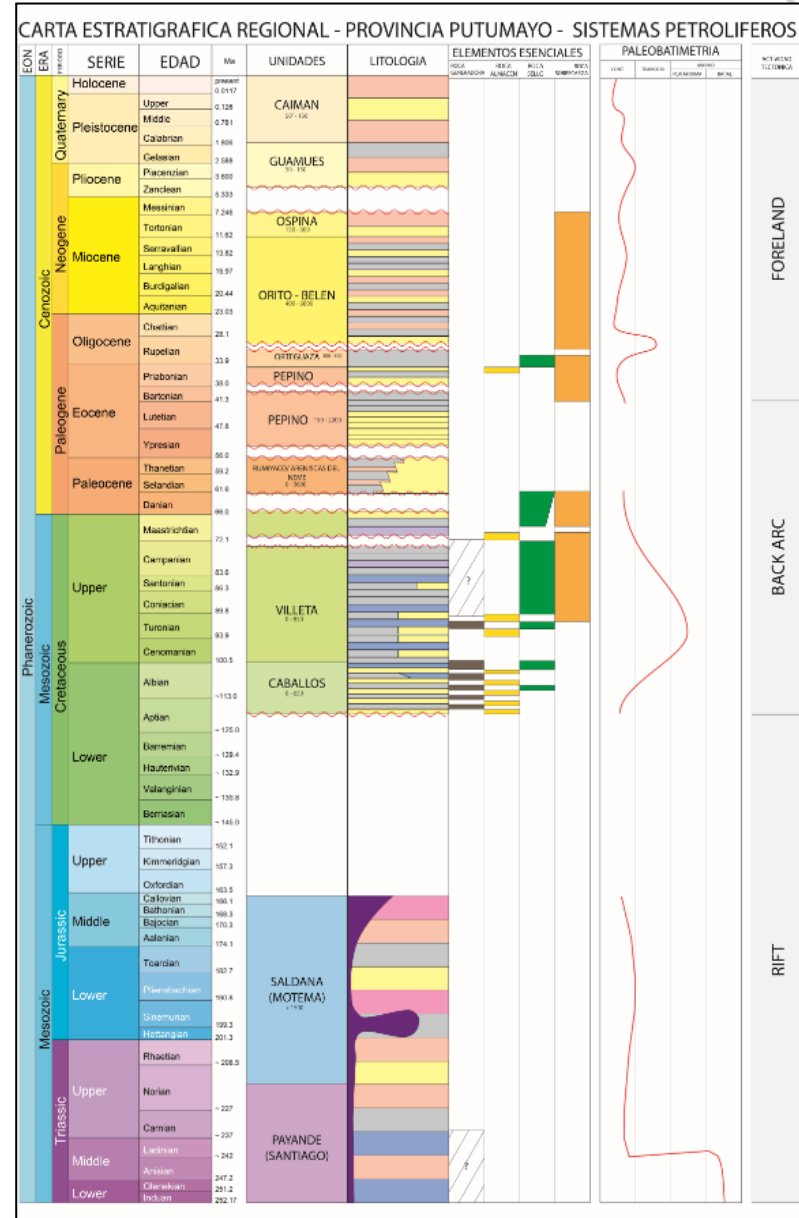


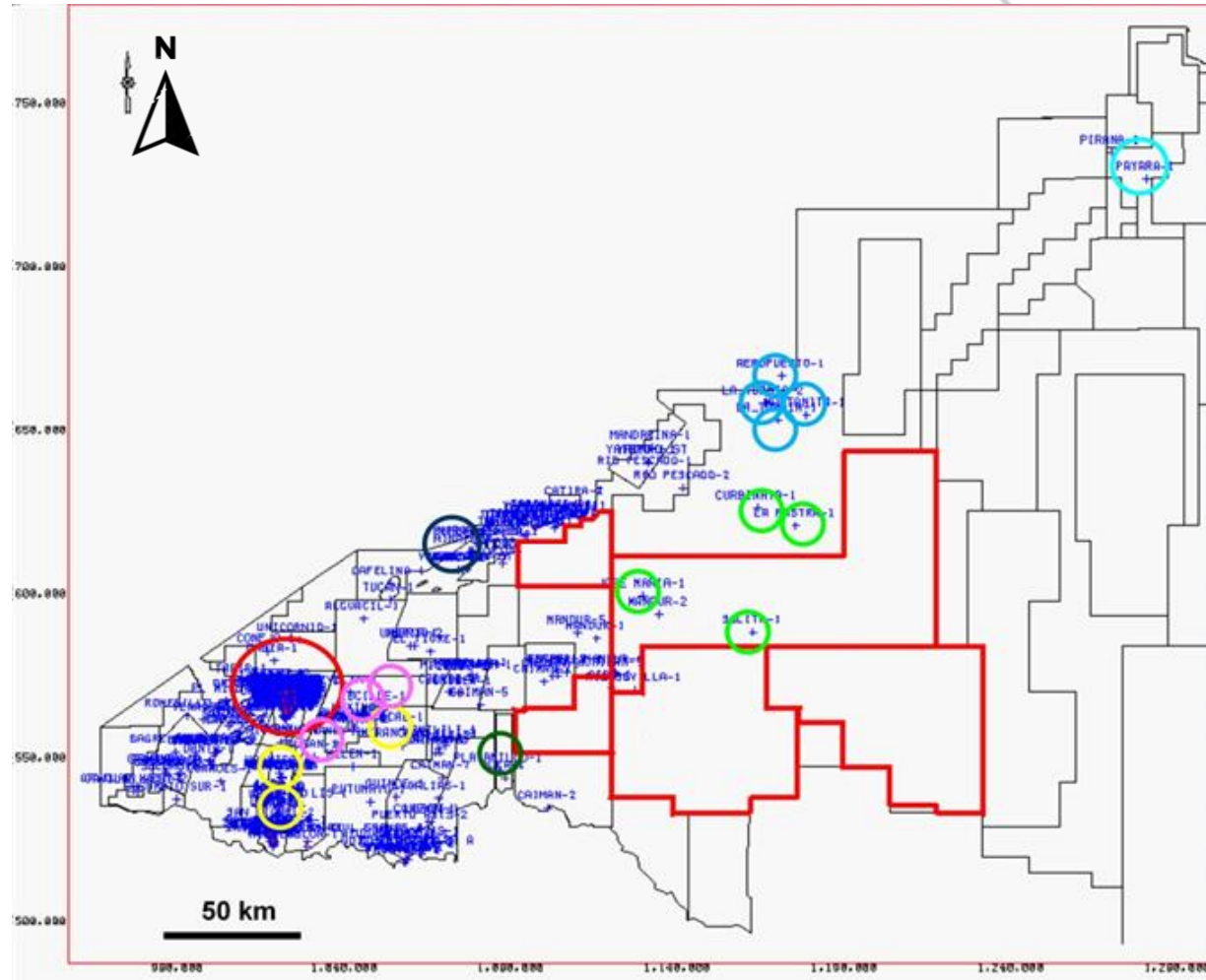
a)



Barrero et al., 2007

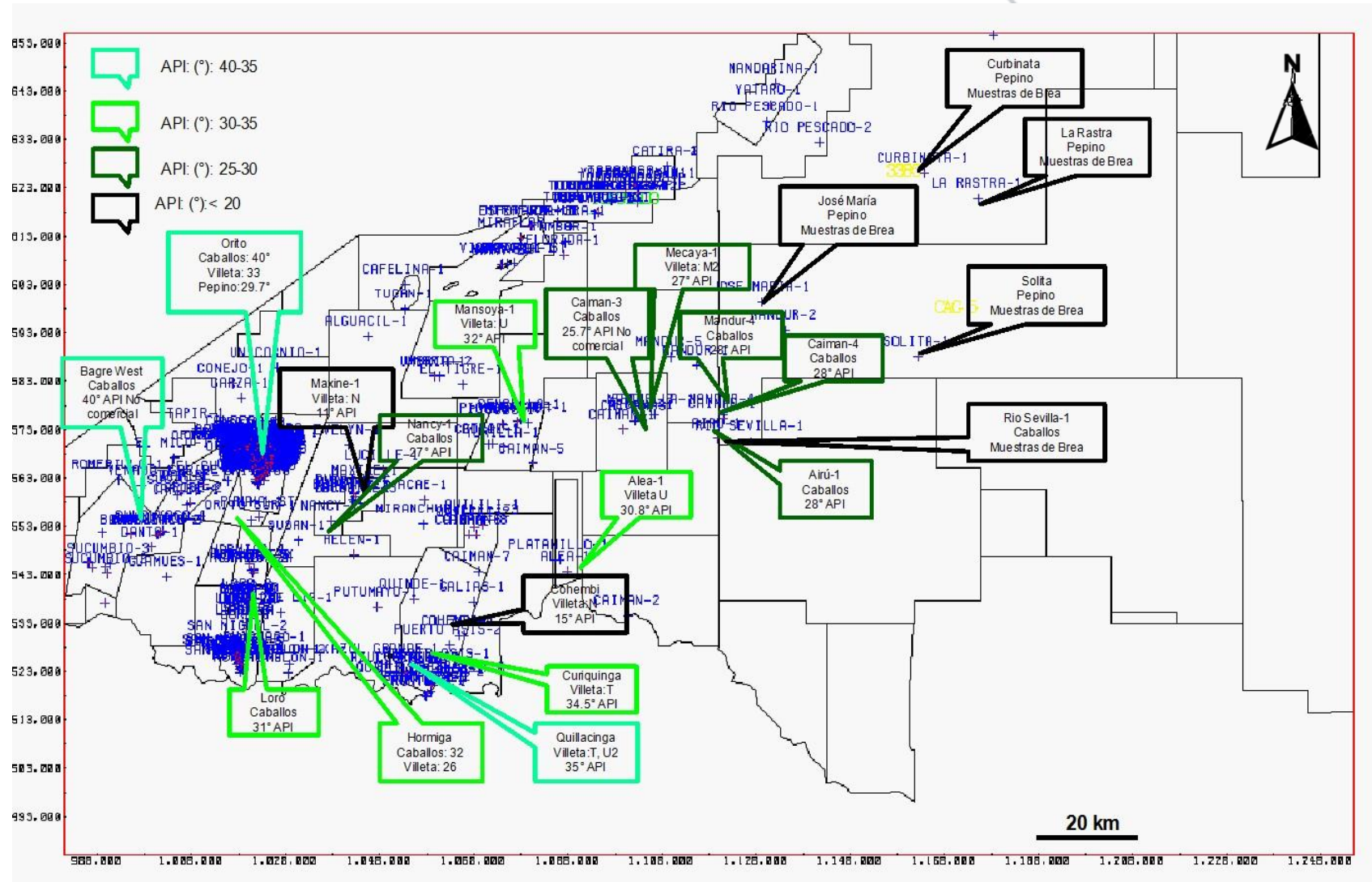
# GENERALIZED STRATIGRAPHIC COLUMN





- Inicia Exploración década 40 Texaco sin éxito comercial
  - Descubrimiento campo ORITO 1963 TEXACO Reservas: 260 MBO
  - Campos Acae, Loro, San Miguel y Hormiga Posterior al descubrimiento de Orito
  - Campos Nancy Maxine y Burdine (1973-1976)
  - OCCIDENTAL prueba nuevo play:: Heavy Oil Play en el área de Florencia (1982) sin éxito comercial
  - Campo Costayaco GranTierra (2007)
  - Campo Platanillo Amerisur (2007)
  - Campo Capella Emerald-Canacol (2010)
- AGENCIA NACIONAL DE HIDROCARBUROS**

# API GRAVITY – PRODUCTION FIELD



ACIPET, Wells Reports

# STRATIGRAPHIC EQUIVALENCES CRETACEOUS SEQUENCE

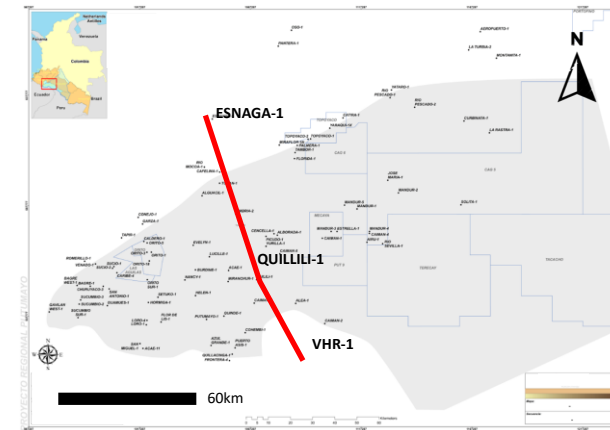
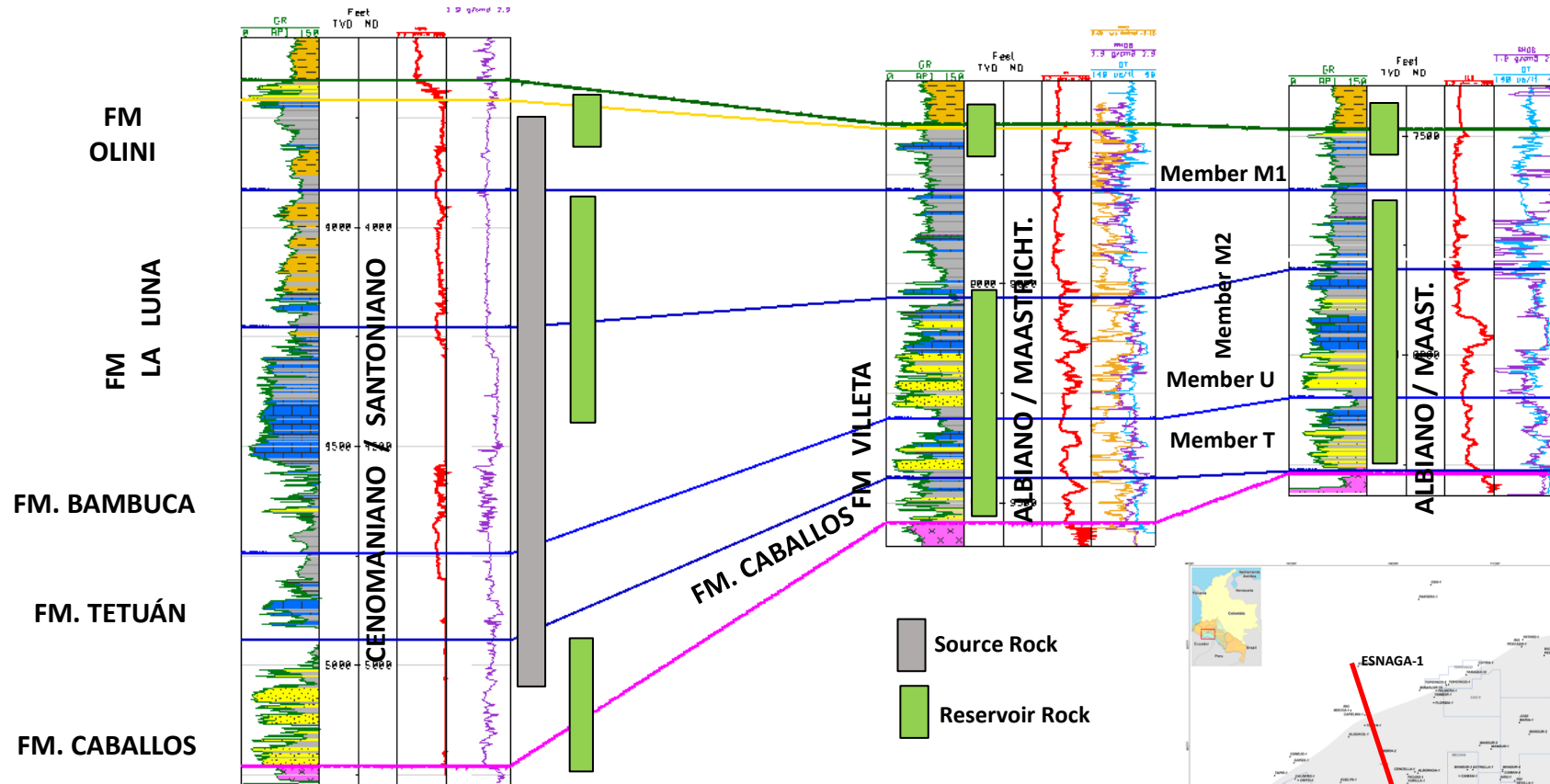
NW

VSM BASIN  
ESNAGA-1

PUTUMAYO BASIN  
QUILLILI-1

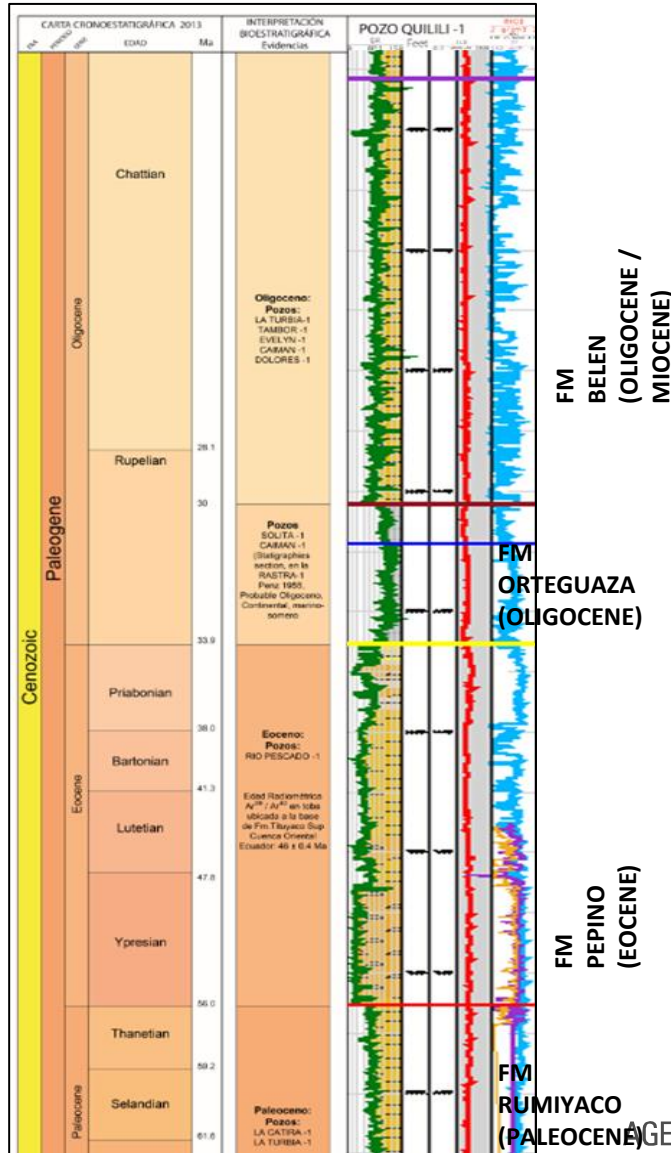
ORIENTAL ECUADOR BASIN  
VHR-1

SE



# STRATIGRAPHIC EQUIVALENCES TERTIARY SEQUENCE

CUENCA PUTUMAYO



Possible Oligocene top: association with Evelyn-1, Dolores-1, Caimán-1, Tambor-1, La Turbia-1 Wells.

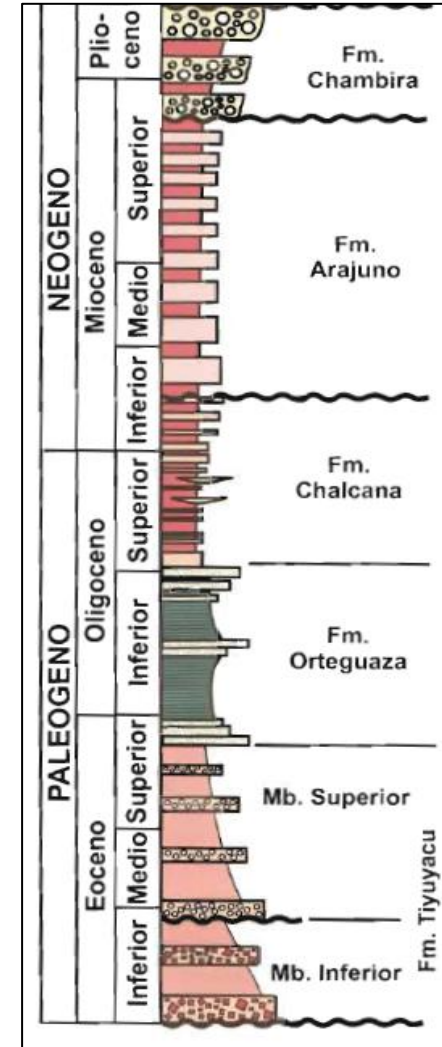
Oligocene: association with Solita-1 and Caimán-1 wells. La Rastra-1 sector, probable Oligocene age, shallow marine, Renz 1956.

Eocene: association with the Río Pescado-1 wells.

In Ecuador: 46 ± 0.4 Ma; radiometric age Ar 16 / Ar 40 in tuff located at the base of the upper Tiyuyaco Formation

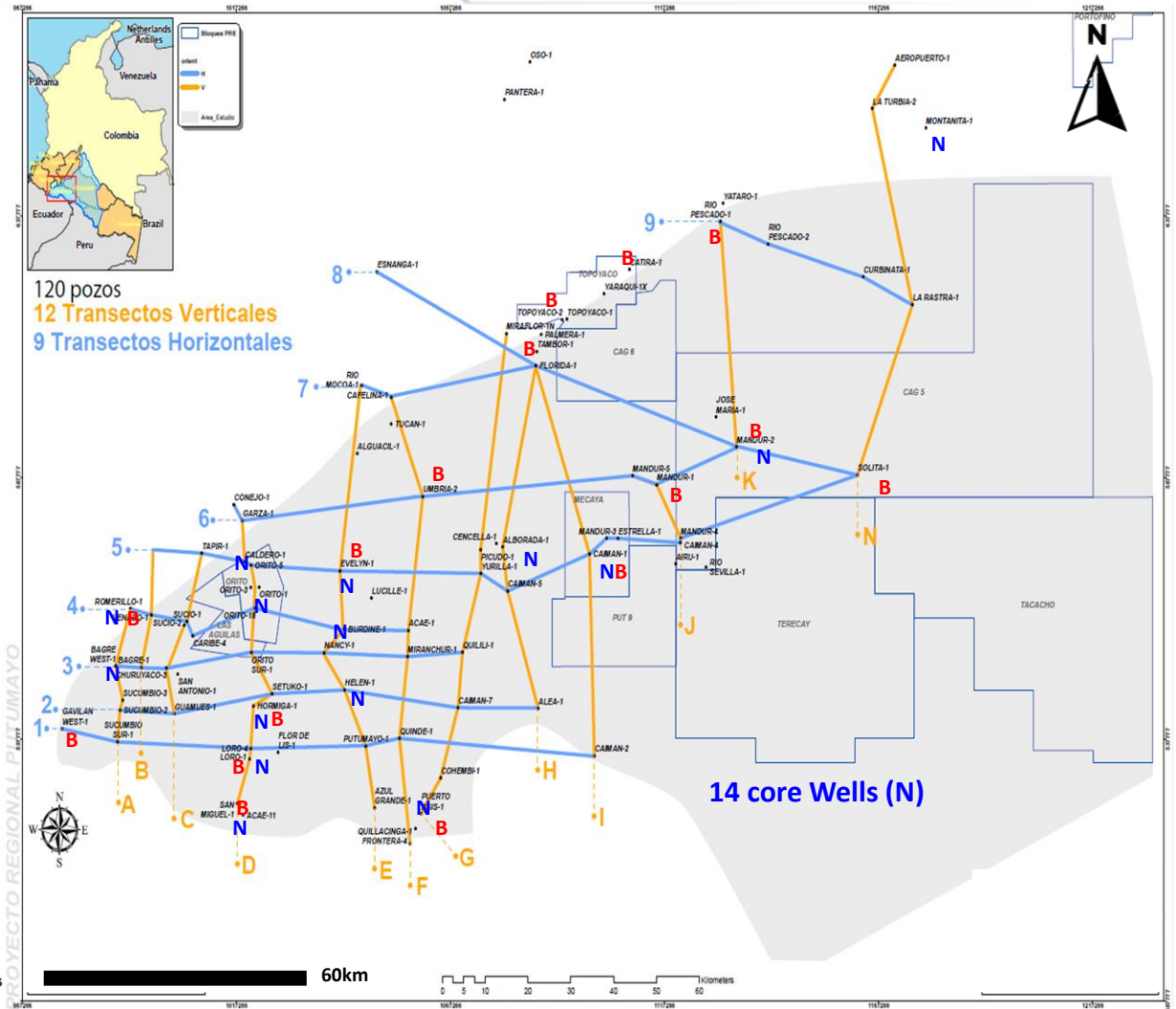
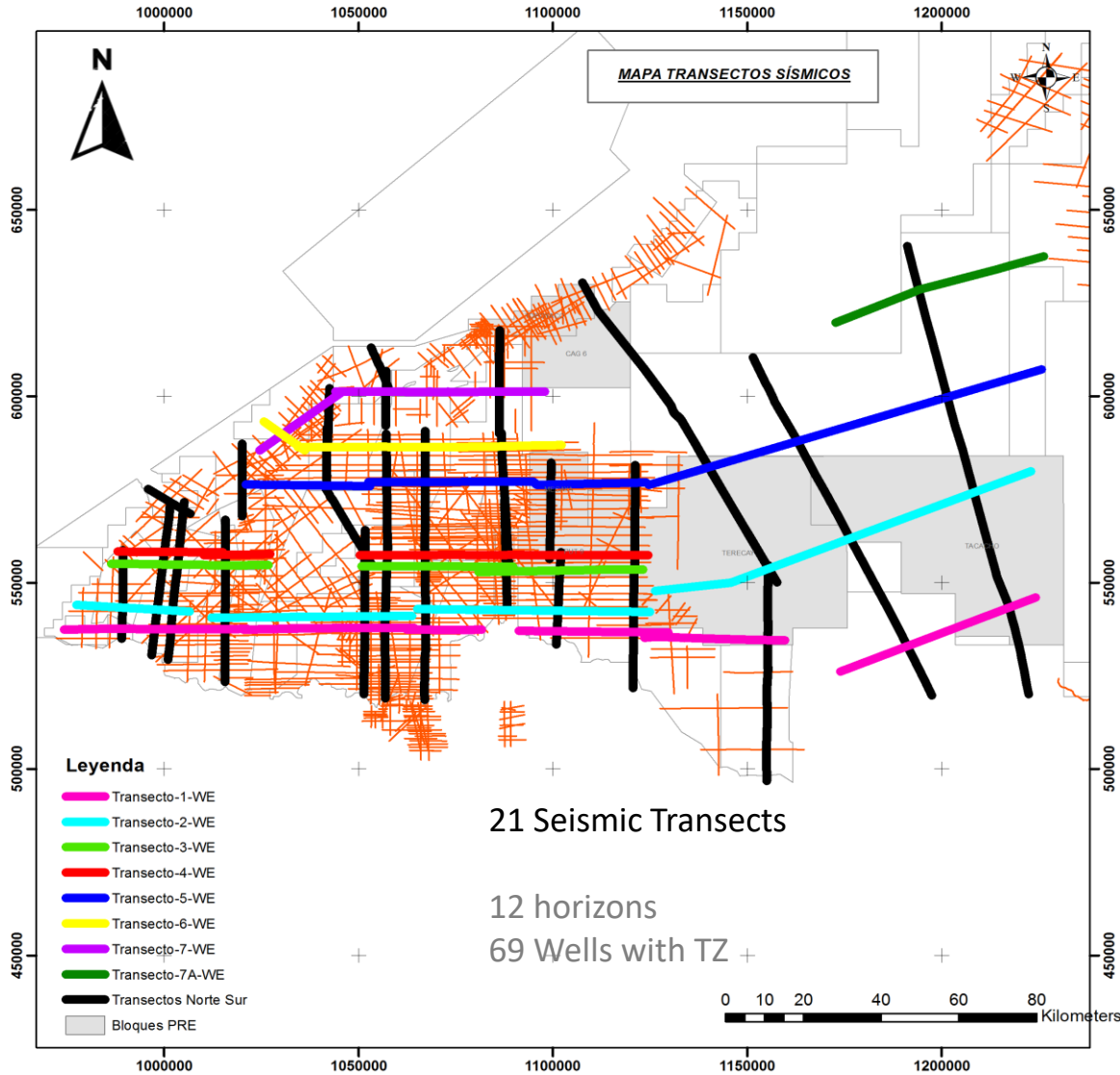
Paleocene: Eocene: association with Río Pescado-1 wells.

CUENCA ORIENTAL



**FM TENA**

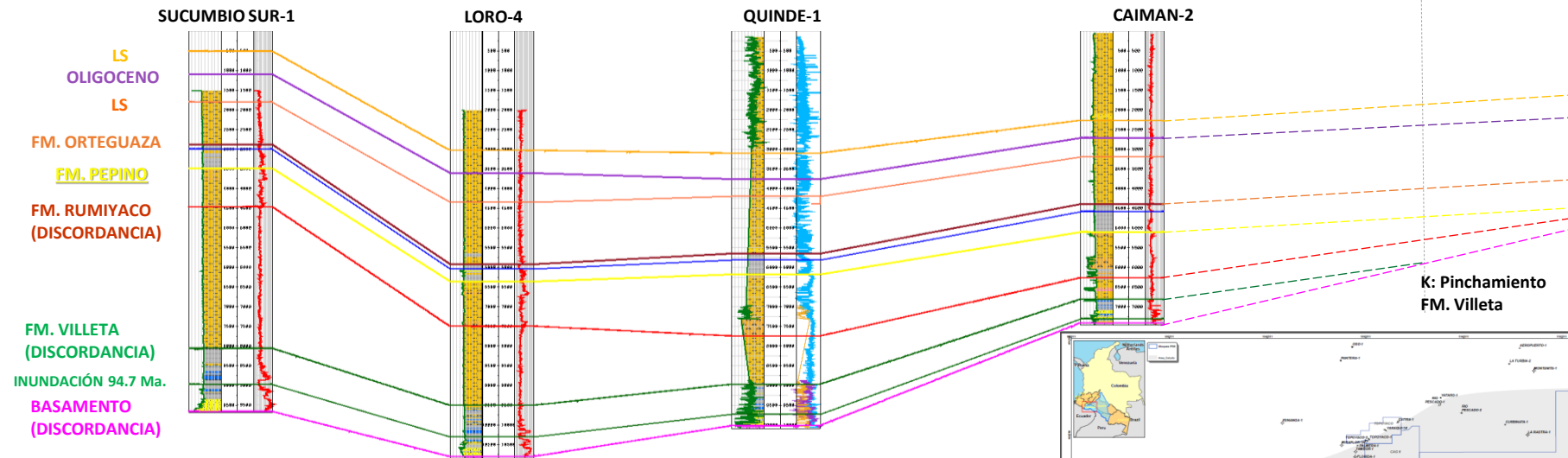
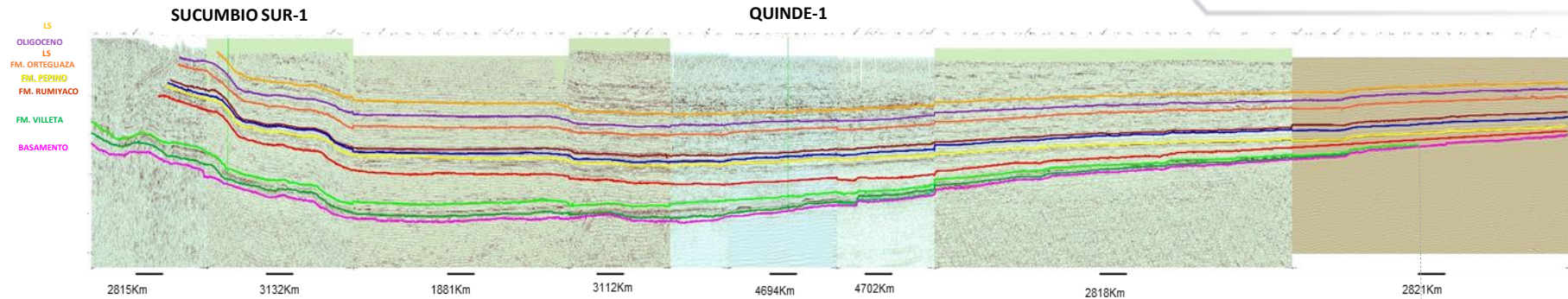




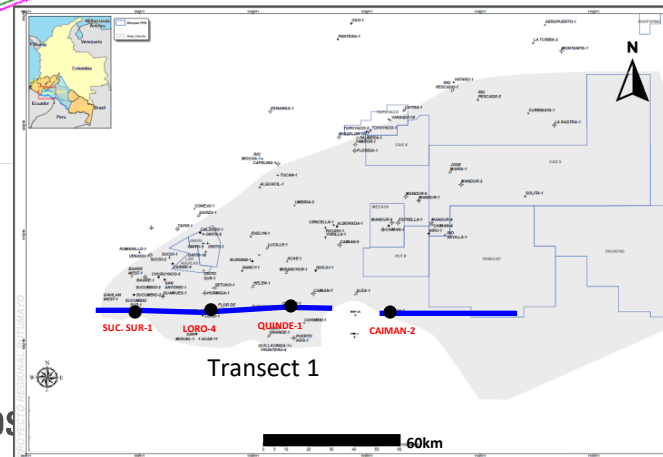
# SEISMIC INTERPRETATION TRANSECT 1

W

E



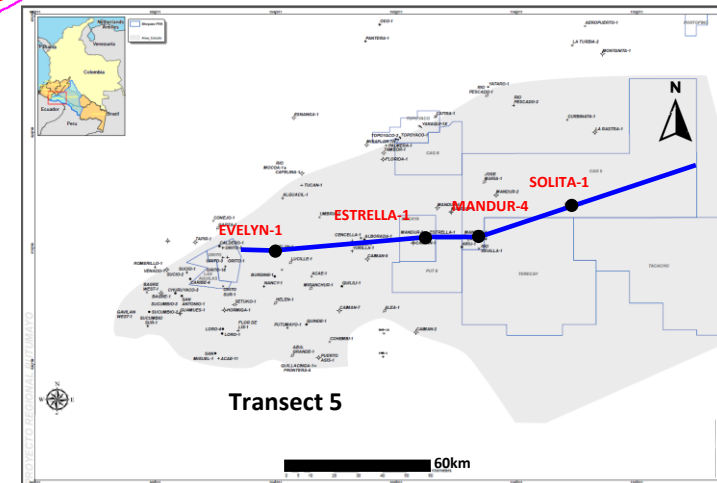
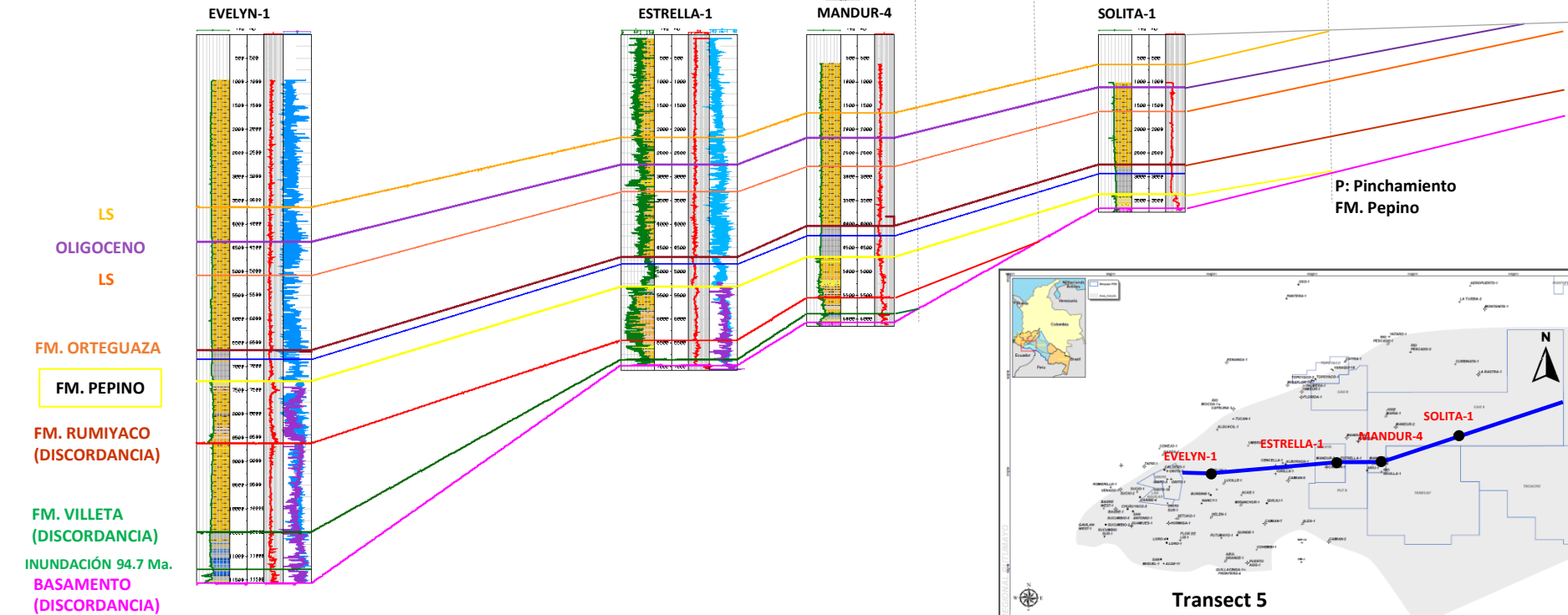
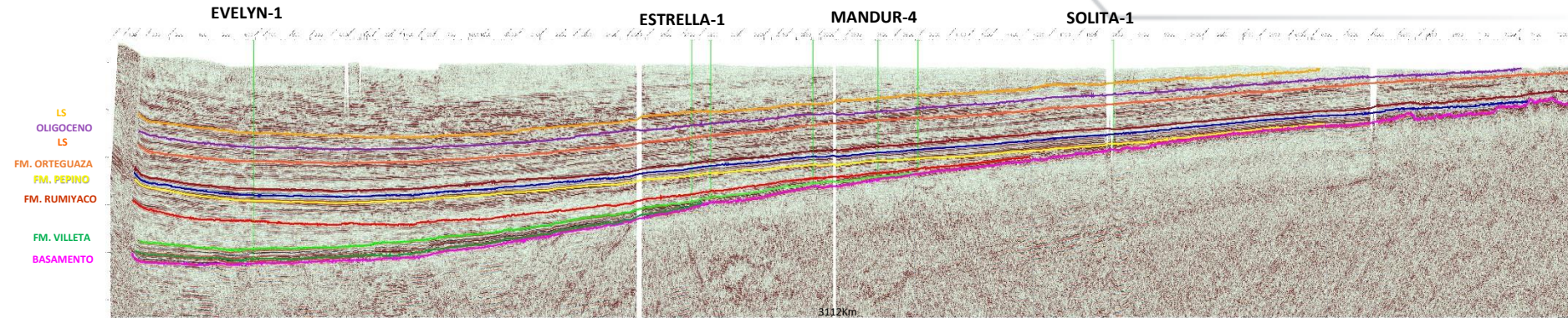
- LS
- OLIGOCENO
- LS
- FM. ORTEGUAZA
- FM. PEPINO
- FM. RUMIYACO (DISCORDANCIA)
- FM. VILLETA (DISCORDANCIA)
- INUNDACIÓN 94.7 Ma.
- BASAMENTO (DISCORDANCIA)

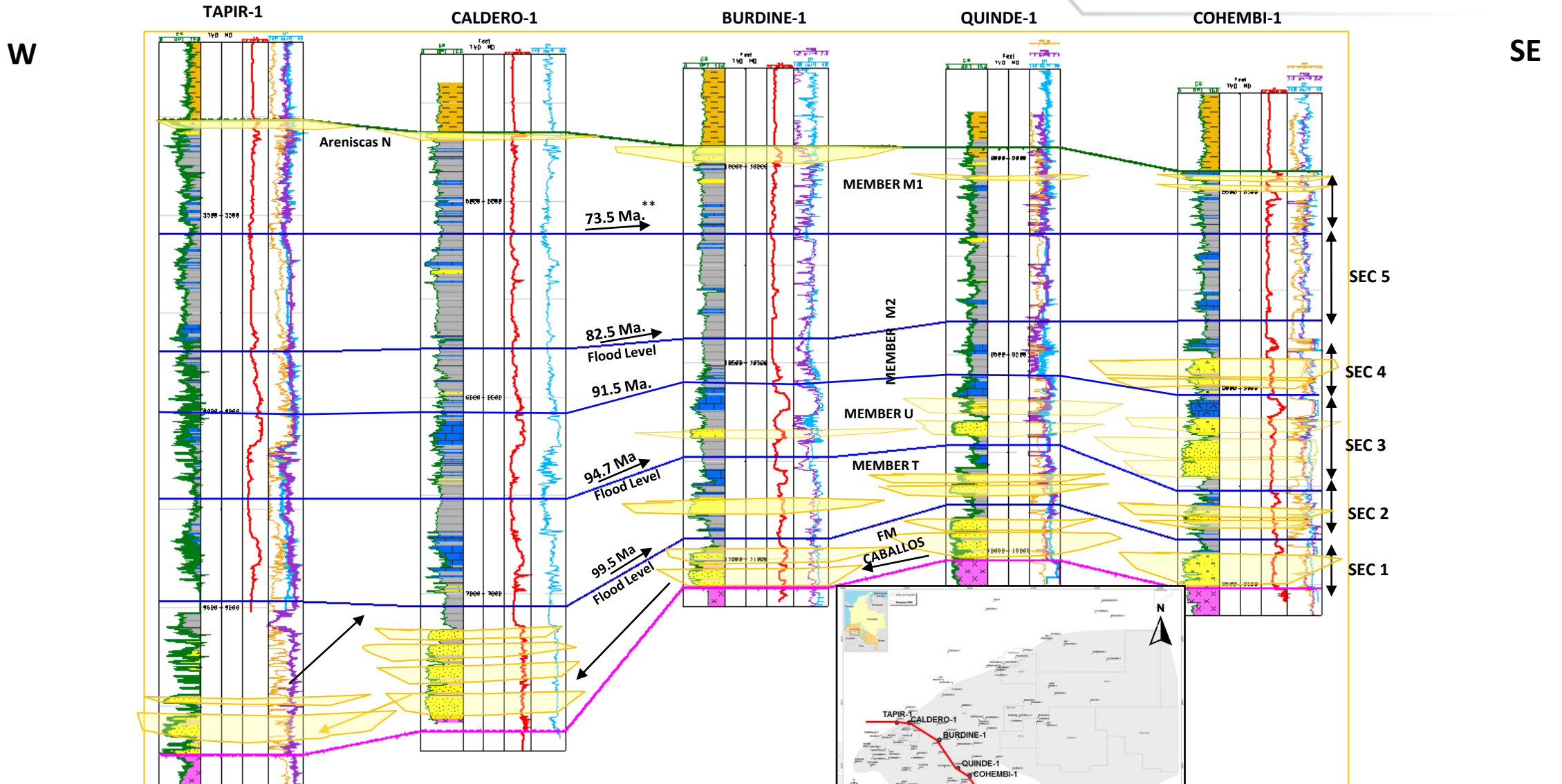


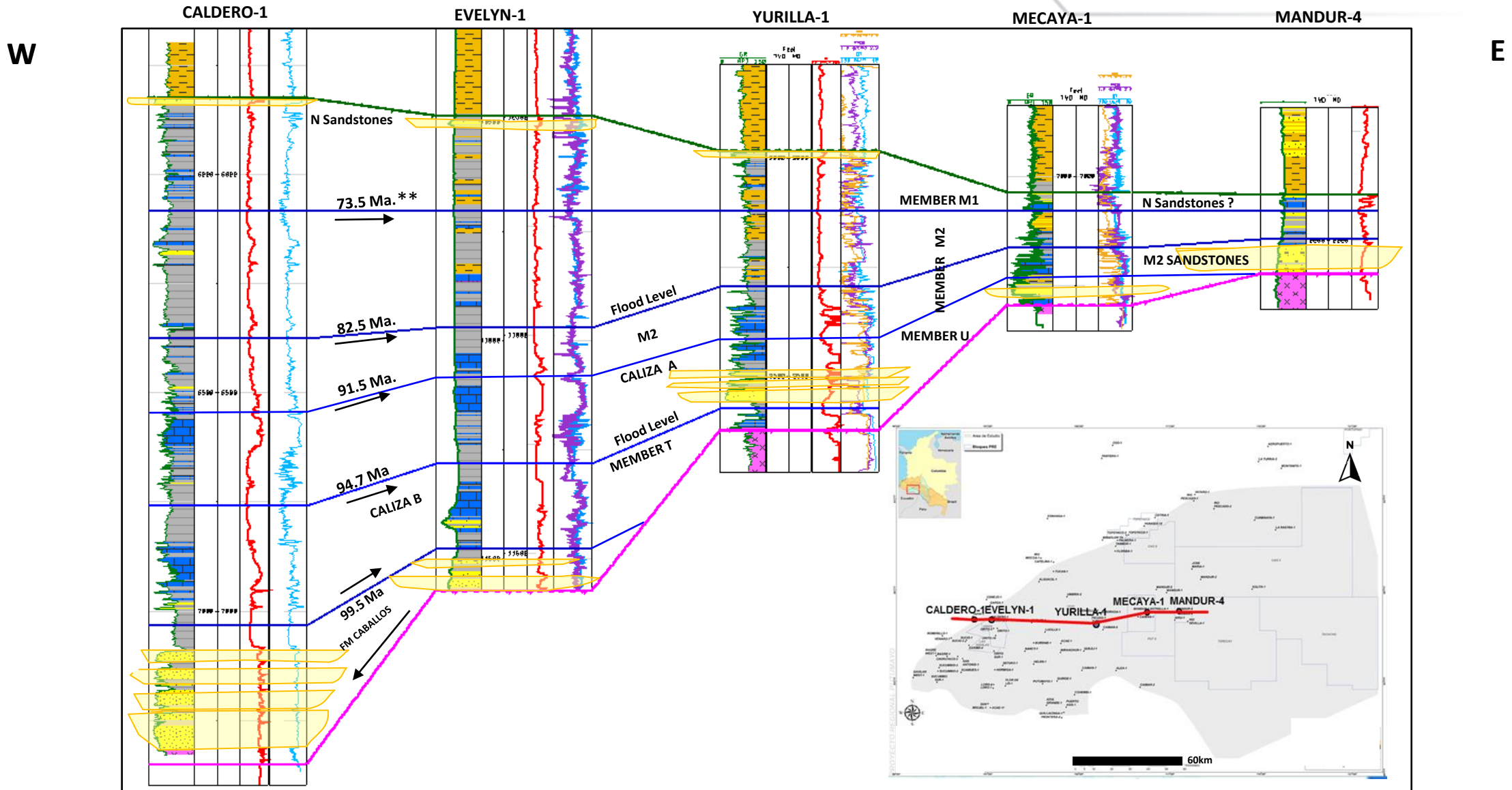
# SEISMIC INTERPRETATION TRANSECT 5

W

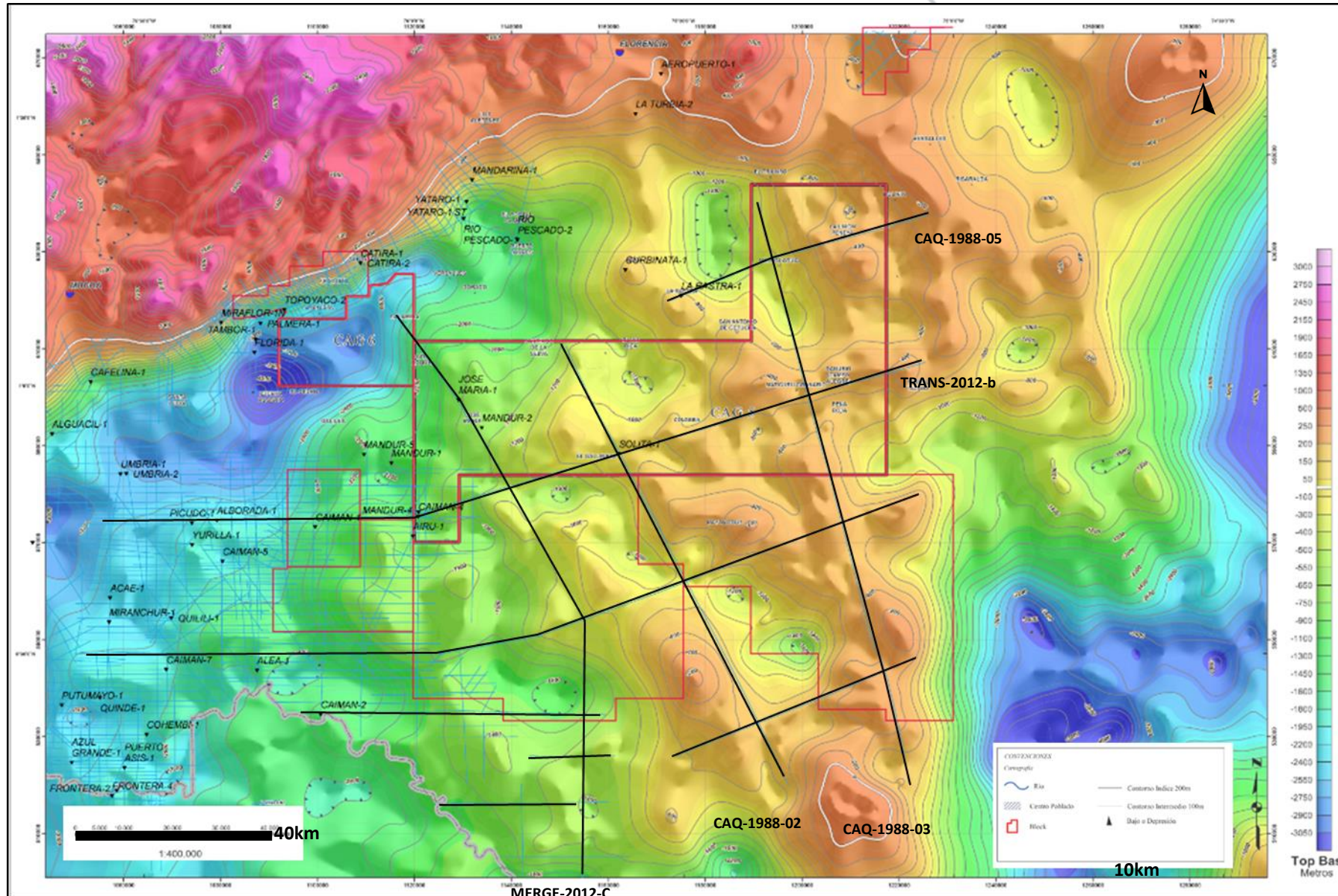
E



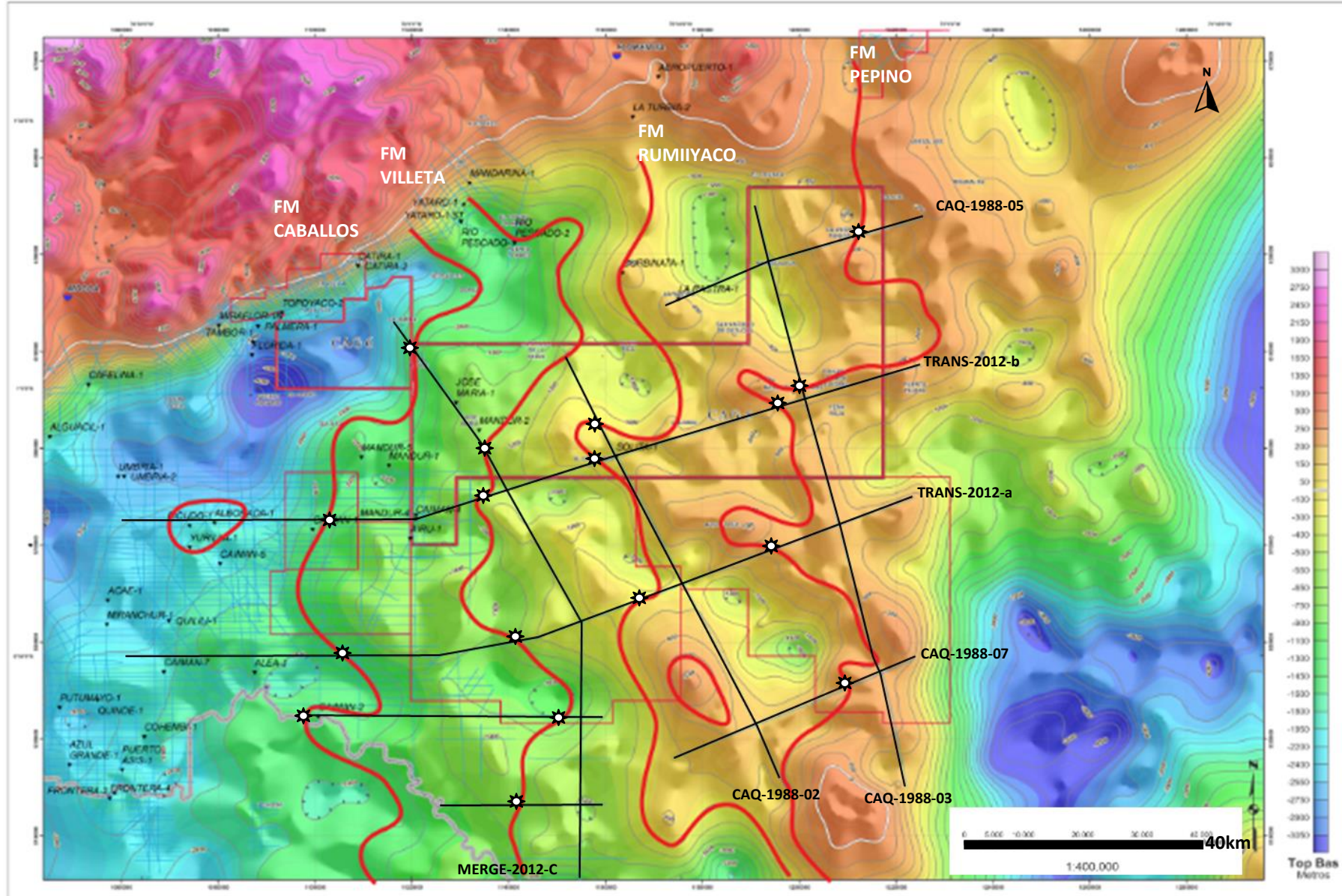




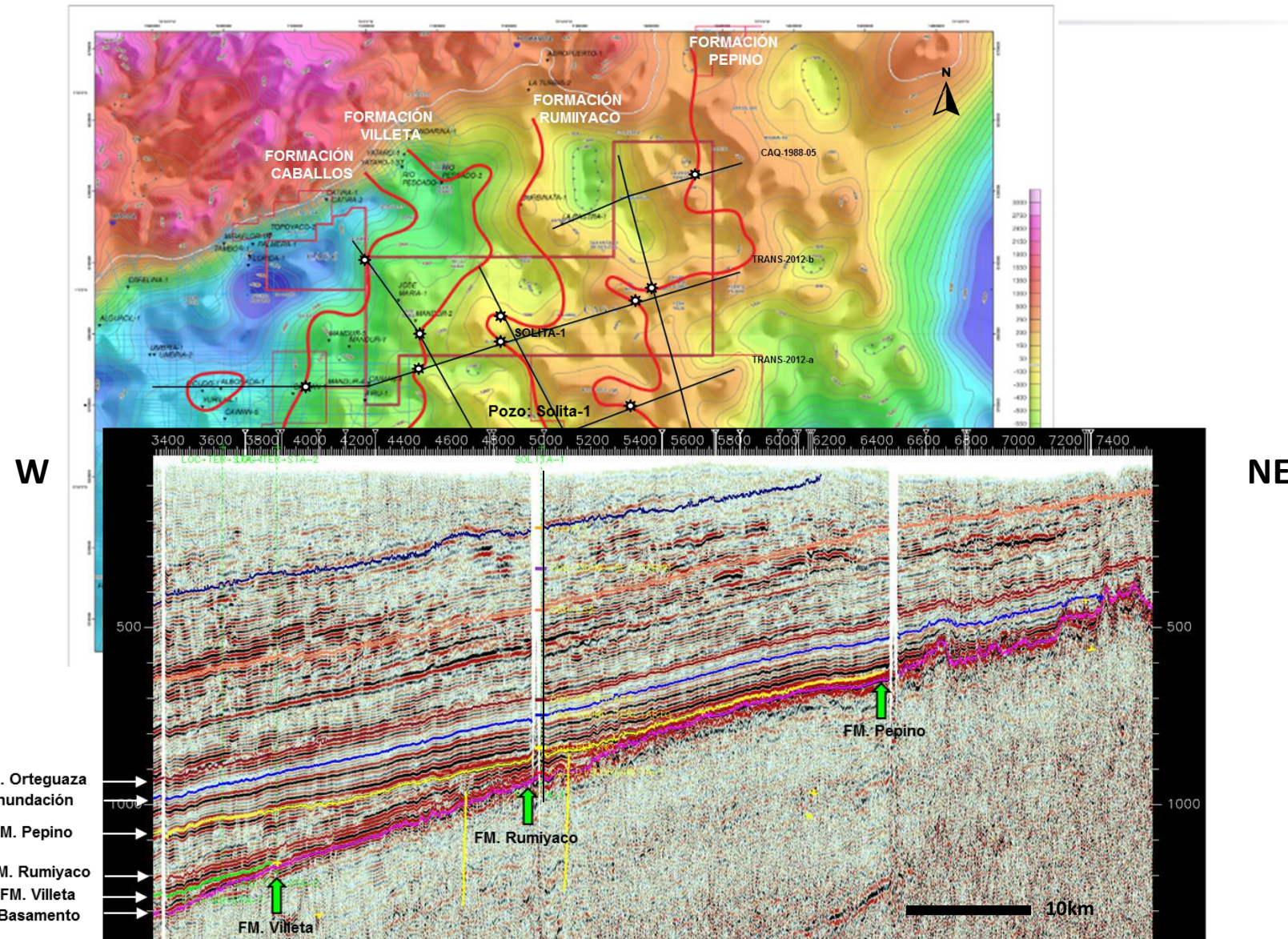
# BASEMENT TOP MAP



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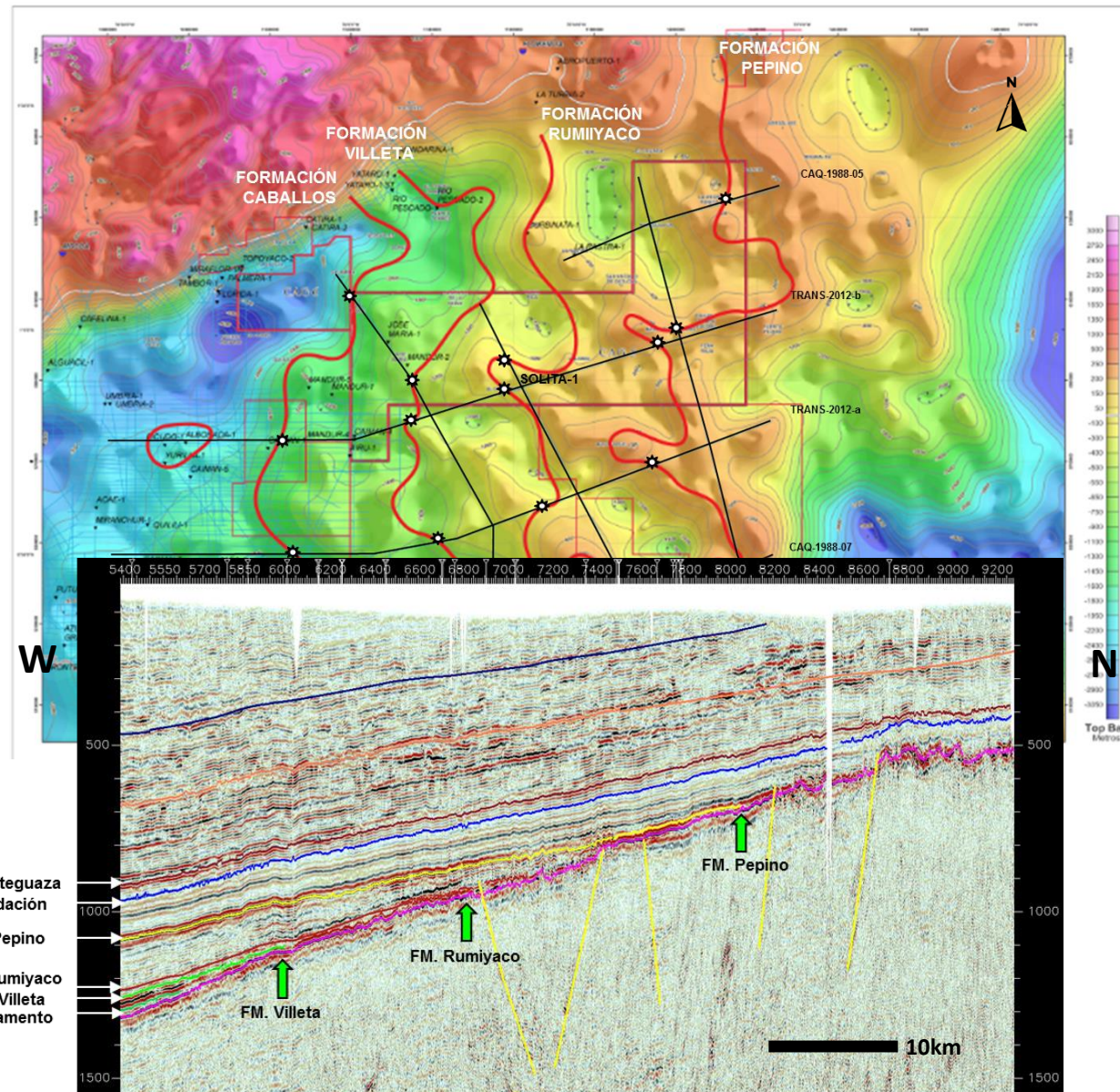


# BASEMENT TOP MAP – Stratigraphics Limits

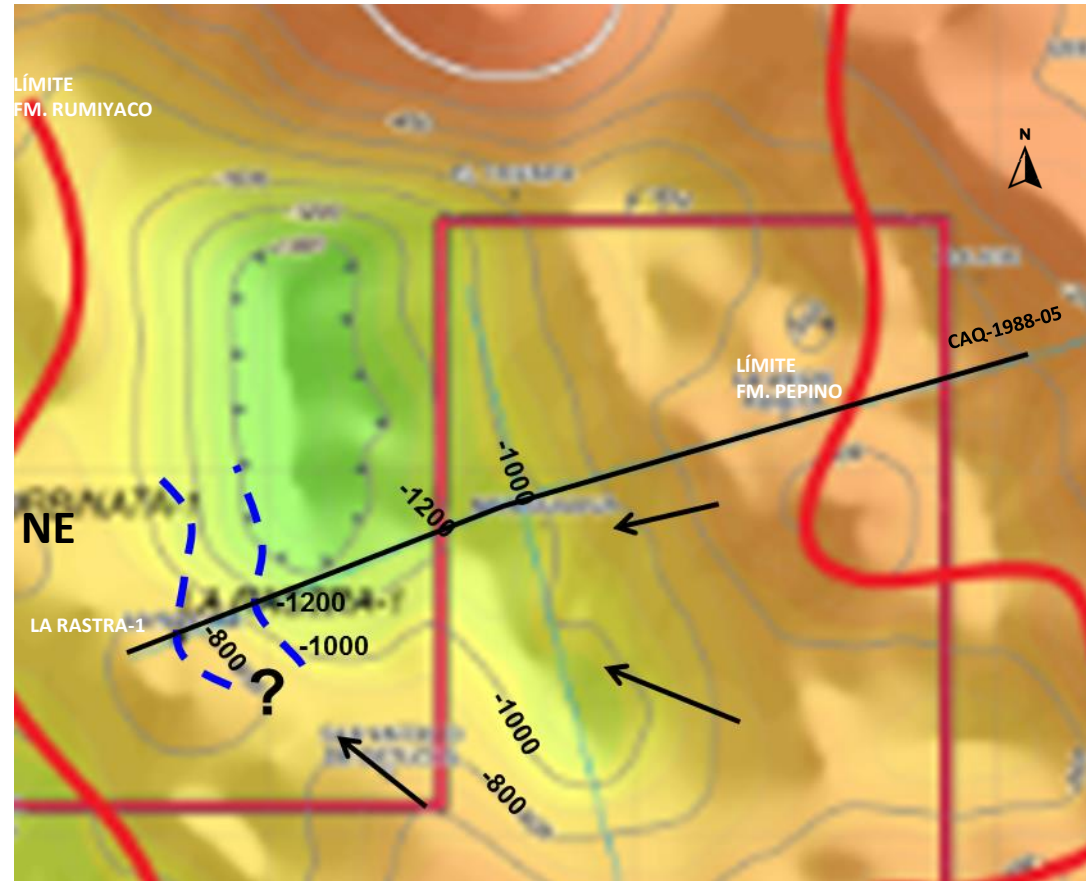
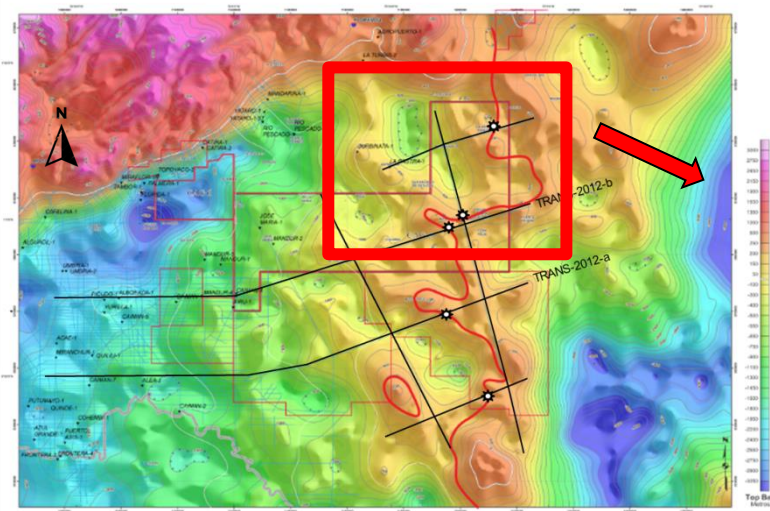




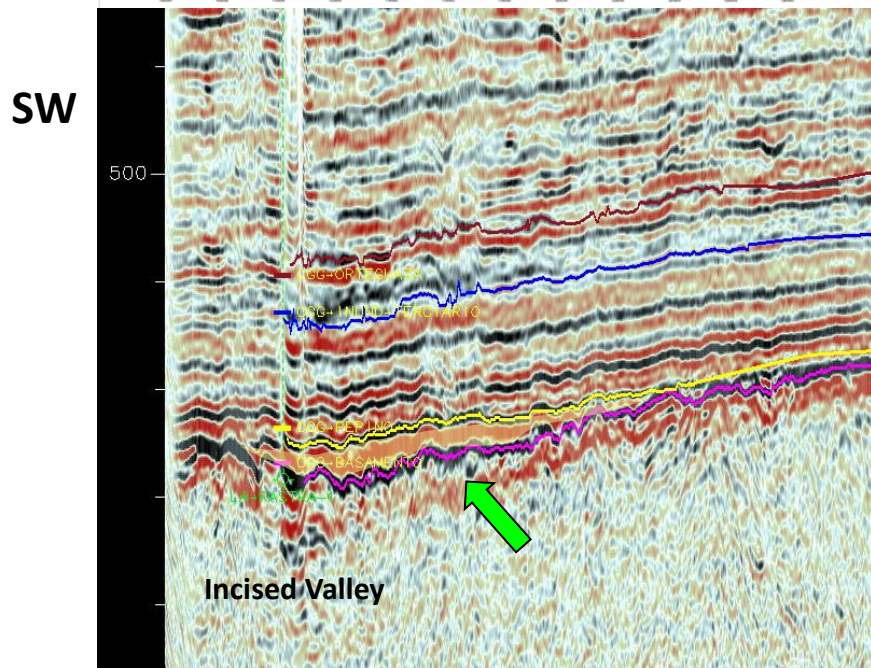
# BASEMENT TOP MAP – Stratigraphics Limits

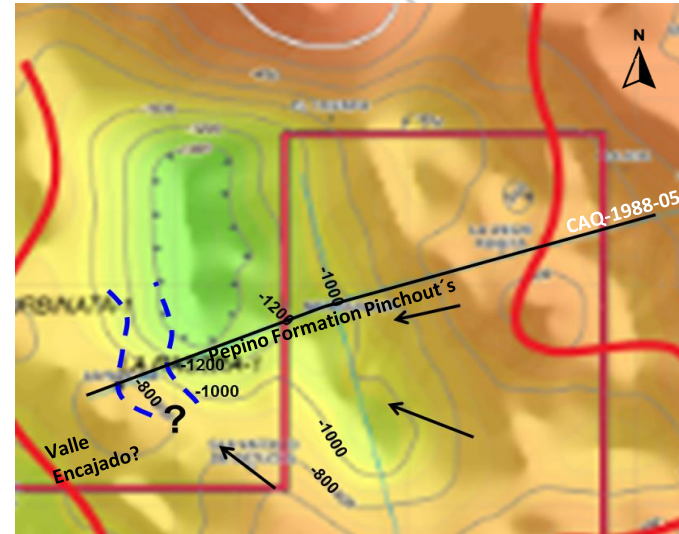
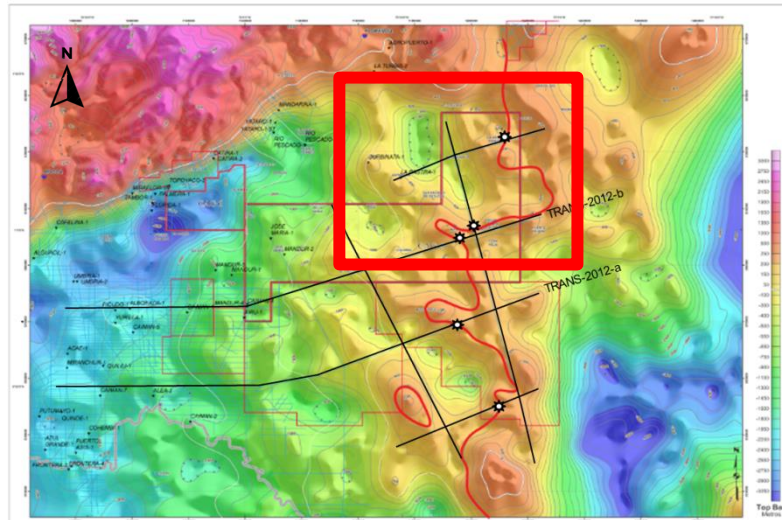


# STRATIGRAPHIC TRAPS



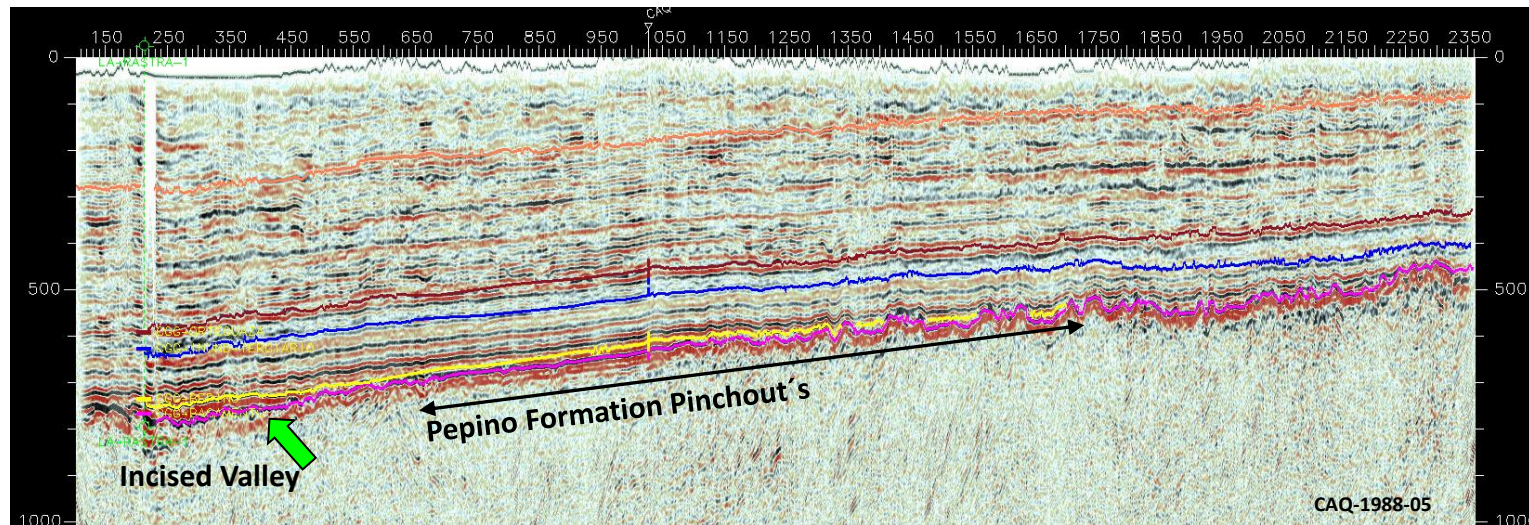
**PEPINO FORMATION**





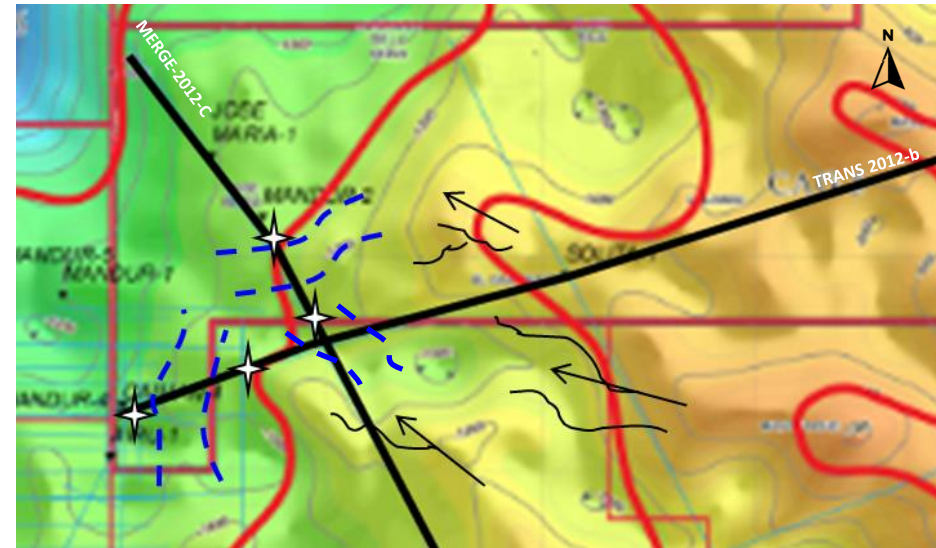
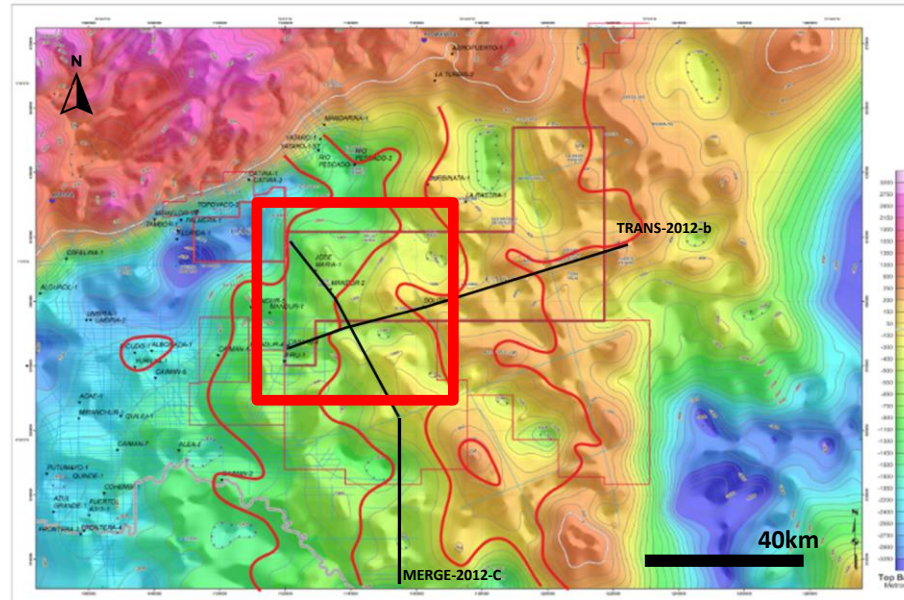
SW

NE

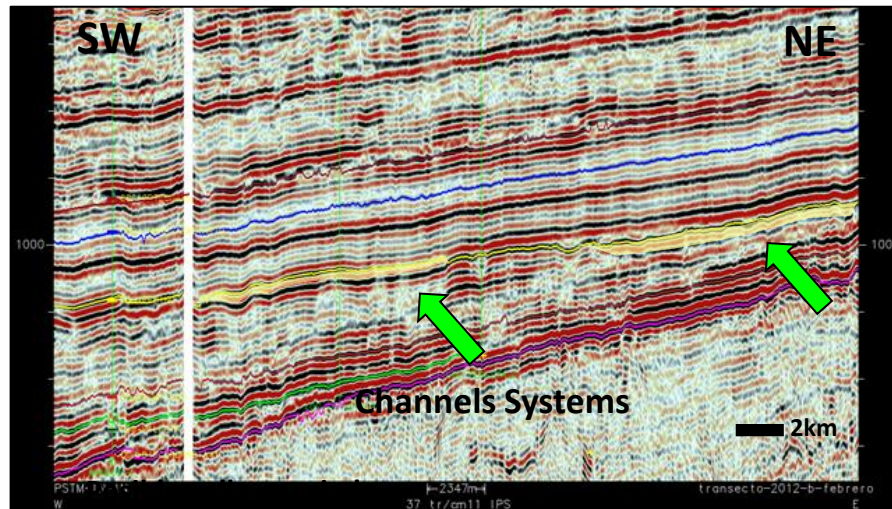


**PEPINO FORMATION**

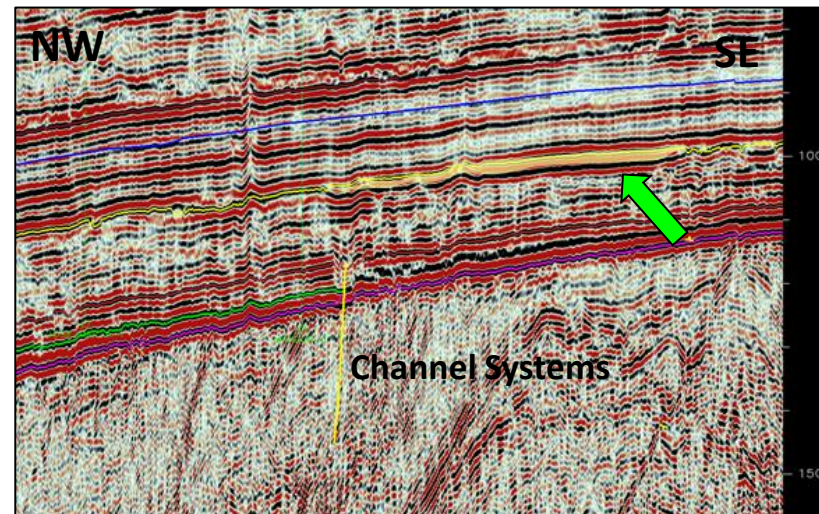
20km



**PEPINO FORMATION**

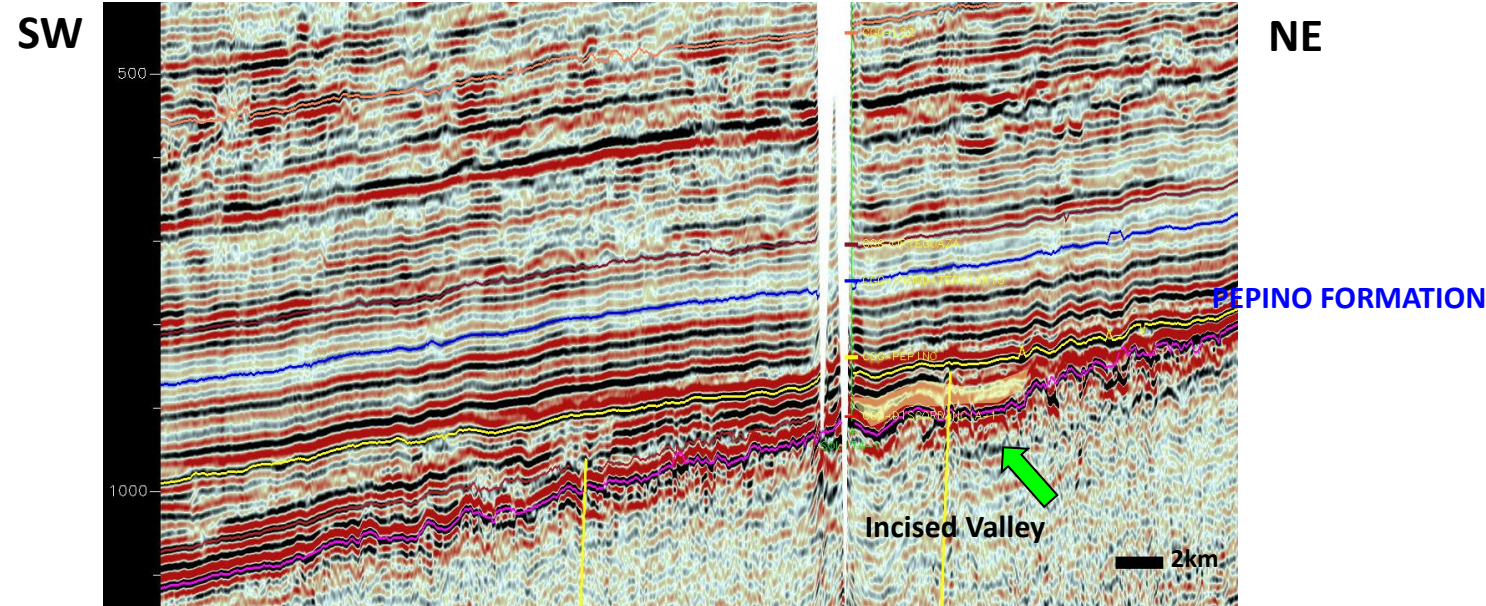
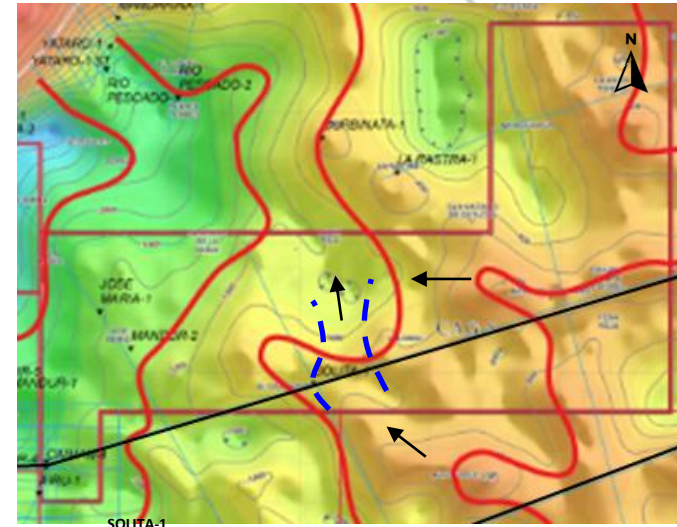
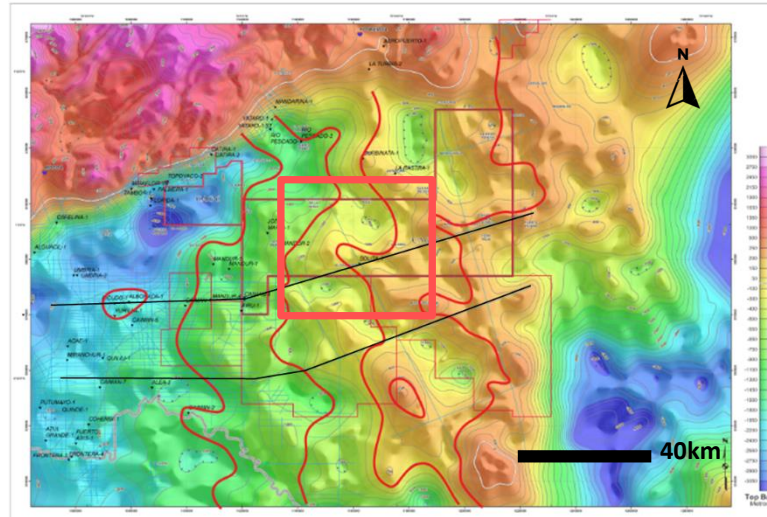


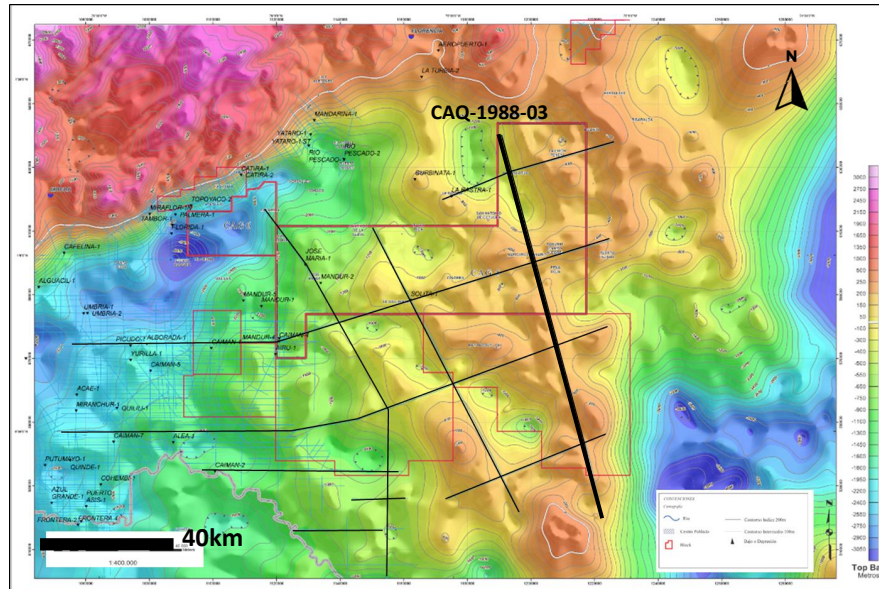
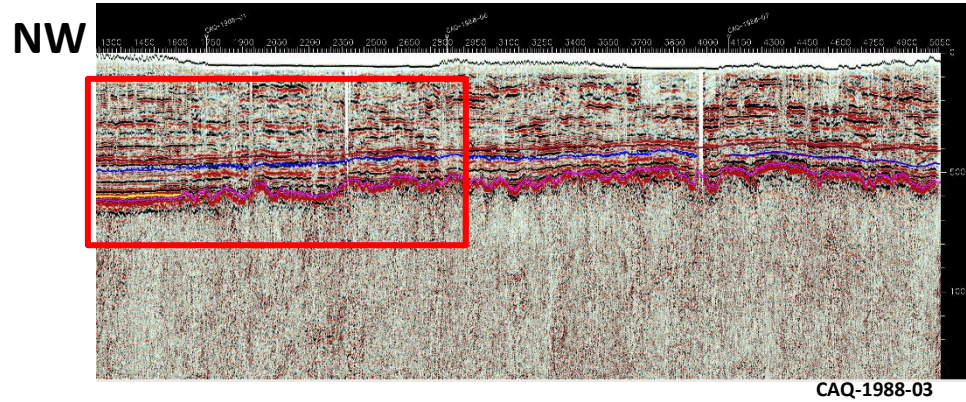
TRANS-2012-b



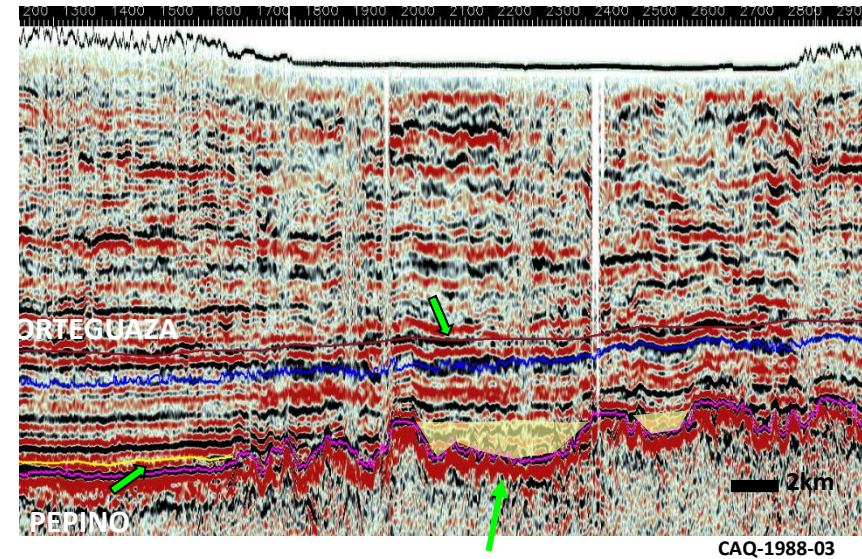
MERGE-2012-C

# STRATIGRAPHIC TRAPS



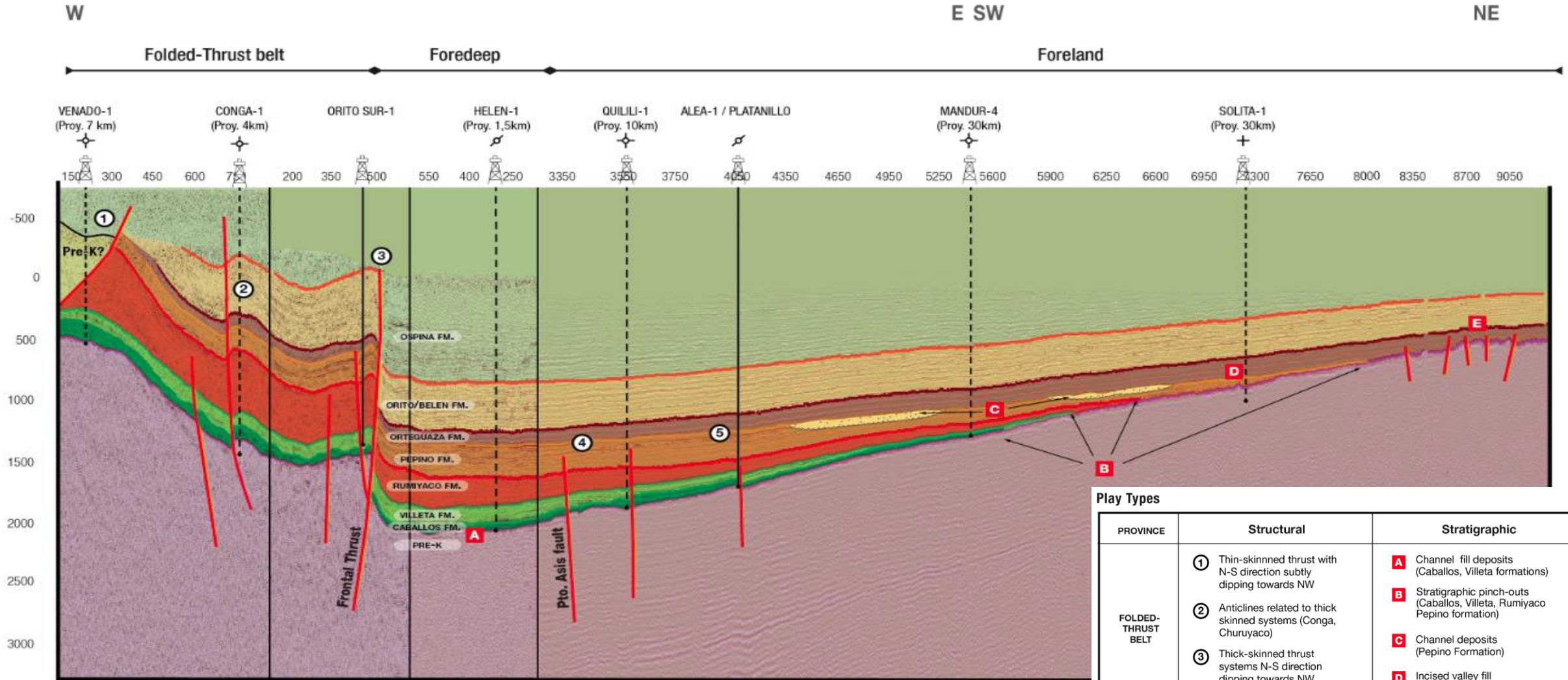


SE



OLIGOCENE CLASTIC?

ORTEGUAZA FORMATION



**Play Types**

| PROVINCE           | Structural  | Stratigraphic   |
|--------------------|---|---|
| FOLDED-THRUST BELT | ① Thin-skinned thrust with N-S direction subtly dipping towards NW            | <b>A</b> Channel fill deposits (Caballos, Villeta formations)                     |
|                    | ② Anticlines related to thick skinned systems (Conga, Churuyaco)              | <b>B</b> Stratigraphic pinch-outs (Caballos, Villeta, Rumiayaco Pepino formation) |
|                    | ③ Thick-skinned thrust systems N-S direction dipping towards NW (Orito Fault) | <b>C</b> Channel deposits (Pepino Formation)                                      |
| FORELAND           | ④ Traps are formed by inversion of normal faults                              | <b>D</b> Incised valley fill (Pepino formation)                                   |
|                    | ⑤   | <b>E</b> Clastic Oligocene sediments (Orteguaza Formation equivalent)             |

## CONCLUSIONS

- In the Putumayo basin, E&P companies have been focused on structural traps mainly and pursuing Cretaceous and Cenozoic formations as source and reservoirs.
- News plays as stratigraphic traps: pinchouts, incised valleys, clastic fills, should be studied and explored in greater detail, because they offer interesting opportunities to find more oil.
- These opportunities must require new geophysical information and seismic imaging improvement, seeking to preserve amplitude, and a wide bandwidth that improves seismic resolution in order to identified stratigraphic features.
- The main risk associated with this type of trap is the seal effectiveness, the migration of hydrocarbons and the integrity of the traps.
- It is possible within the basin the extension of the oil and heavy oil belt of the Llanos. In addition, Paleozoic petroleum system must be studied.