



ONSHORE
LOWER
CONGO BASIN



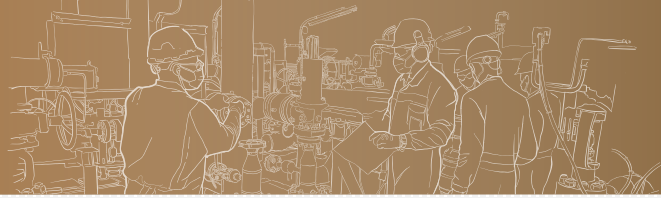
2023
LICENSING ROUND
OF OIL CONCESSIONS
REPUBLIC OF ANGOLA

ONSHORE
KWANZA BASIN

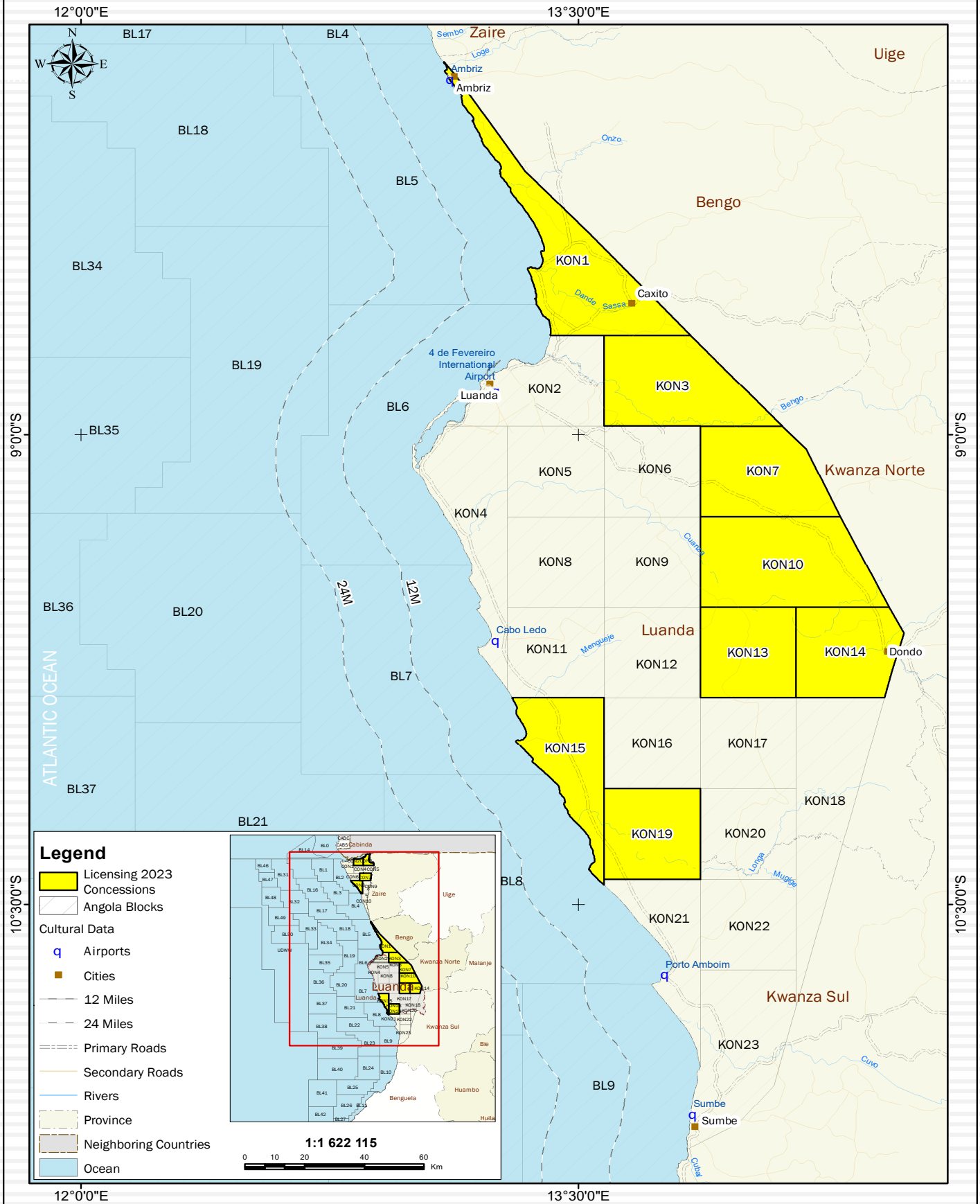


ONSHORE
KWANZA BASIN

B R O C H U R E



GENERAL MAP OF THE KWANZA BLOCKS

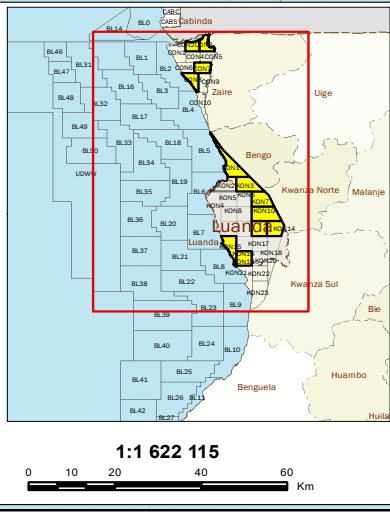


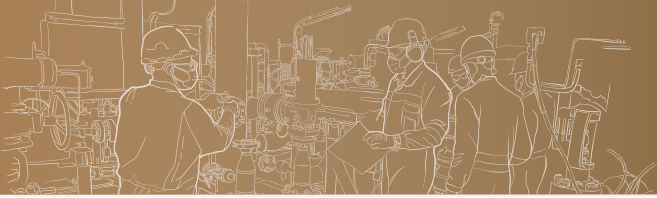
Legend

- Licensing 2023 Concessions
- Angola Blocks

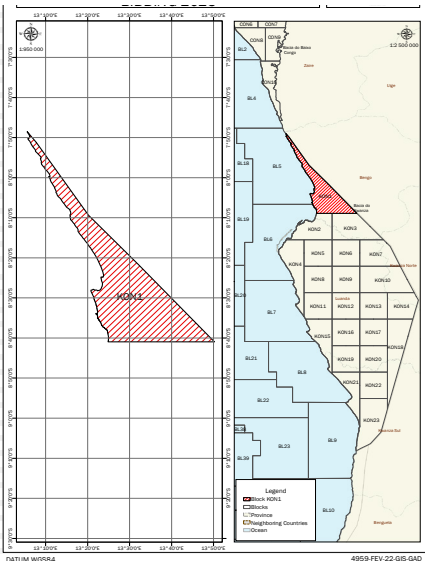
Cultural Data

- q Airports
- Cities
- 12 Miles
- 24 Miles
- Primary Roads
- Secondary Roads
- Rivers
- Province
- Neighboring Countries
- Ocean





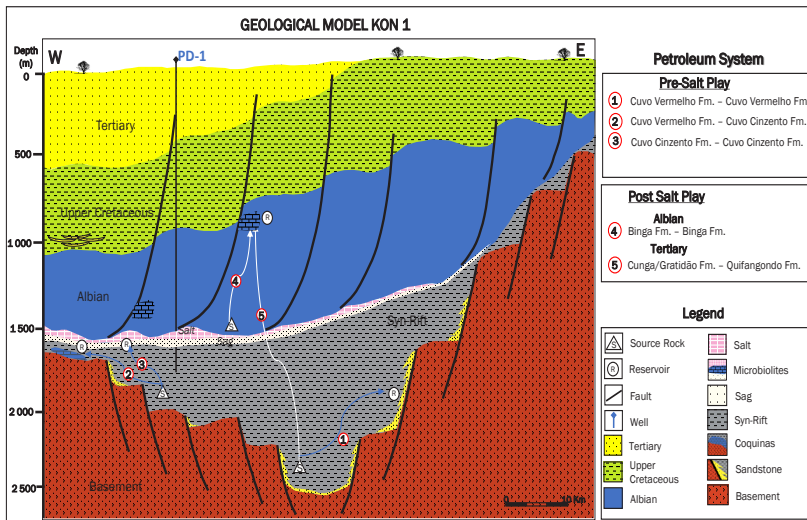
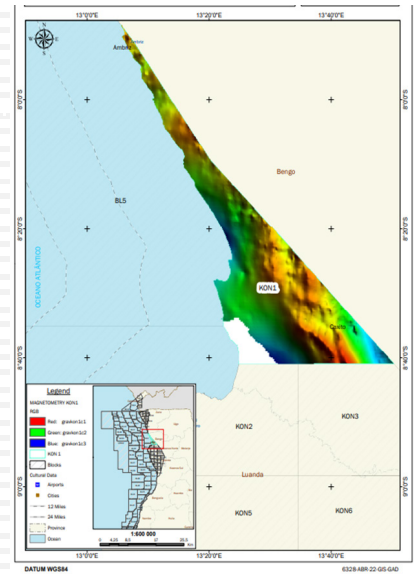
BLOCK KON 1



Block KON1 is in the northern Part of Kwanza Basin, in the Soyo area. Limited to the north by the Precambrian Basement, to the south by Blocks KON 2 and KON 3, to the east by the Precambrian Basement and to the west by the Atlantic Ocean.

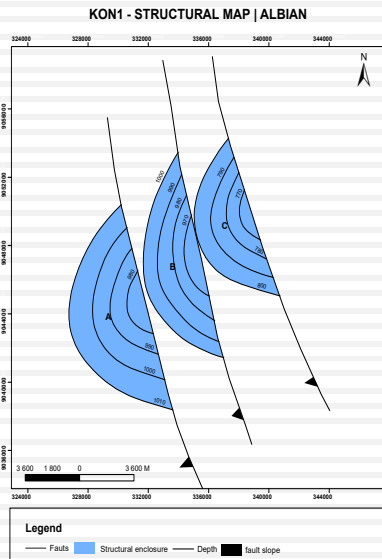
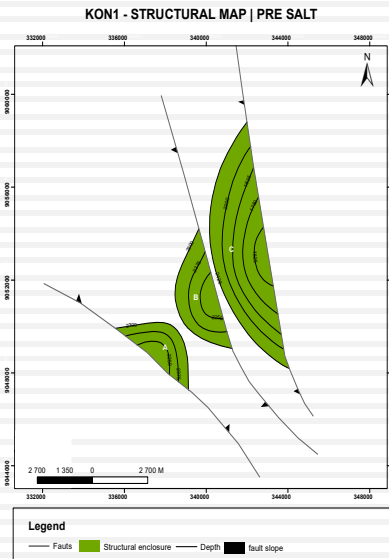
Area: 1.575,75 km²

- 1915-1932: sixteen (16) explorations wells drilled.
- 1970-1973: 500 Km of 2D seismic acquired and processed by Petrangol.
- 2010-2015: Geological mapping and geochemical conducted by Obrangol and Previsão Oil.



Pre-salt: Dominated by of horsts and graben. The grabens, represents a potential generation kitchen of hydrocarbon. The clays of Red Cuvo and Gray Cuvo Formations are potential source rocks, the sandstones of the Red Cuvo in pinchout, carbonates on top of the horsts and sandstones of the Gray Cuvo are the reservoir rocks. The salt layer deposited in early Aptian with greater evidence in the western part of Block which is the main seal rock of this unit.

Post-salt: Represented by extensional structures (rafts and turtles backs) in the Albian with listric faults, because of salt tectonic. Clays limestones are potential source rocks, salt windows allow the migration of hydrocarbons from Pre-salt to Post-salt. In the Upper Cretaceous, the sediments, such as marls and gray clays, are potential source and seal rocks, sandstones of the Itombe and Teba Formations are potential reservoirs. The Tertiary is absent in the eastern part and had greater representativeness to the west of the Block.



OPPORTUNITIES

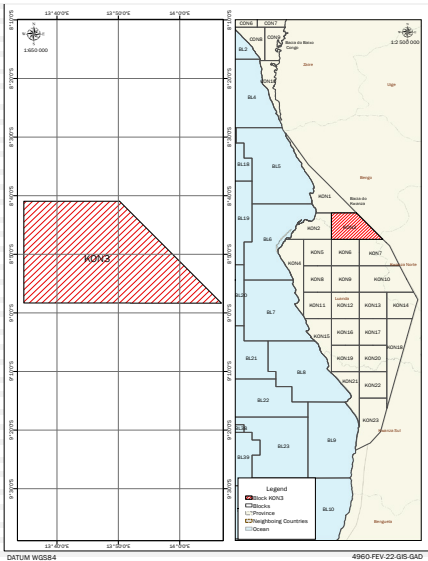
Post Salt

- **Source:** Shales from Cuvo and Binga Formation
- **Reservoir:** Carbonates from Binga and Catumbela Formation.
- **Trap:** Combined (Structural and Stratigraphic)
- **Seal:** Shales from Binga and Cabo Ledo Formation.

Pre Salt

- **Source:** Shales from Cuvo Formation
- **Reservoir:** Carbonates from Cuvo and sandstones wedging onto basement highs.
- **Trap:** Combined (Structural and Stratigraphic)
- **Seal:** Shales from Cuvo Formation and salt.

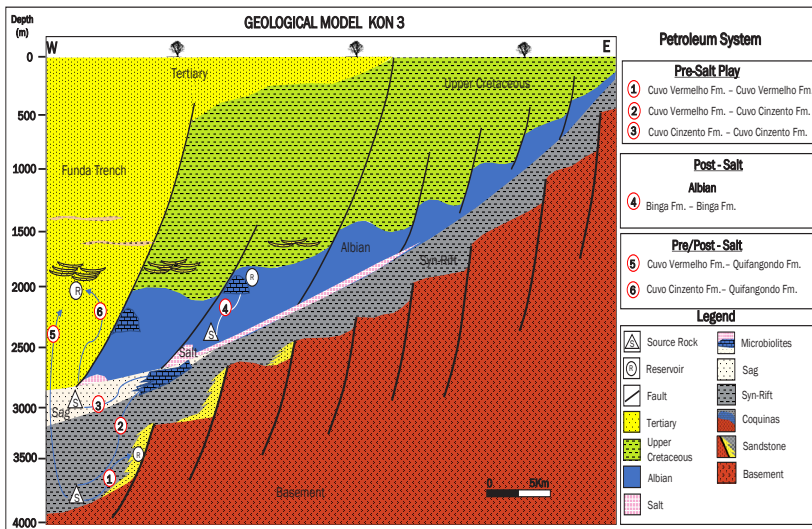
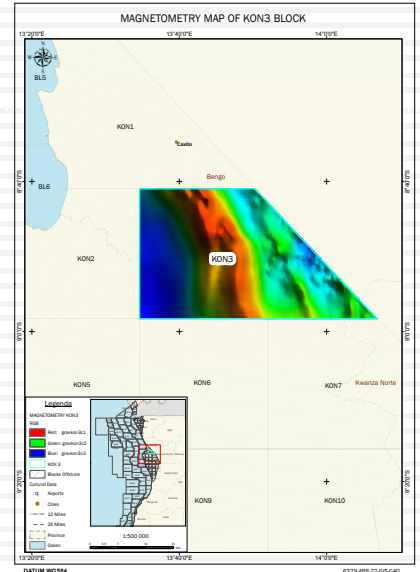
BLOCK KON 3



Block KON 3 is in the northeastern portion of the onshore Kwanza Basin. It is limited to the north by Block KON 1, to the south by Blocks KON 6 and KON 7, to the east by Precambrian Basement and to the west by Block KON 2.

Area: 1.385,06 km²

- 1970-1973: Seismic acquisition by Petrangol.
- 1998: Aerogravimetric and magnetometry surveys by ENI.
- 2009-2012: 68,5 Km of 2D seismic acquired by Geokinetics.
- 2010-2015: Geological mapping and geochemical conducted by Obrangol and Previsão Oil.



Pre-Salt: Characterized by horsts and grabens. The deeps zones, mainly on the west, represents areas of hydrocarbon generation. The clays of Red Cuvo and Gray Cuvo Formations are potential source rocks, the sandstones of the Red Cuvo in pinchout, carbonates on top of the horsts and sandstones of the Gray Cuvo are the reservoir rocks. Although the salt layer is thin on this section, but it represents the seal on this level and we also have the intraformational shales from cuvo Formation.

Post-Salt: Represented by extensional structures (rafts and turtles backs) in the Albian with listric faults, because of salt tectonic. Clays limestones are potential source rocks, salt windows allow the migration of hydrocarbons from Pre-salt to Post-salt. In the Upper Cretaceous, the marls and gray clays, are potential source and seal rocks, sandstones of the Itombe and Teba Formations are potential reservoirs. At the Tertiary level, because of the sedimentary overload, it formed the Funda trench to the west, with a predominance of potential reservoir sands in the Quifangondo Formation.

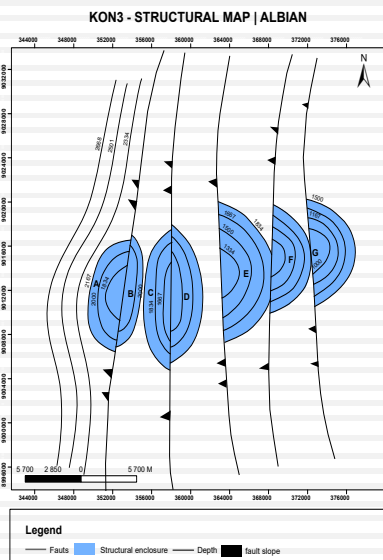
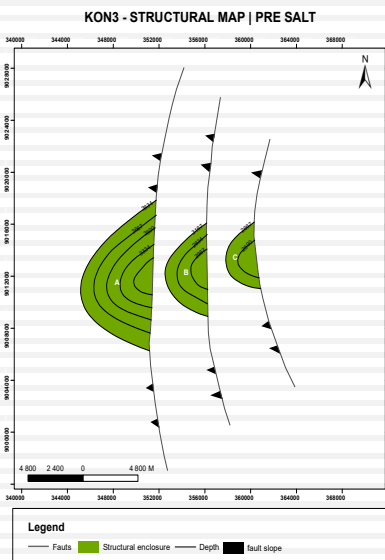
OPPORTUNITIES

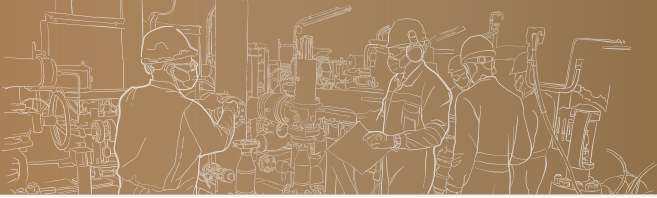
Post Salt

- **Source:** Shales from Cuvo and Binga Formation
- **Reservoir:** Carbonates from Binga and Catumbela Formation.
- **Trap:** Combined (Structural and Stratigraphic)
- **Seal:** Shales from Binga and Cabo Ledo Formation.

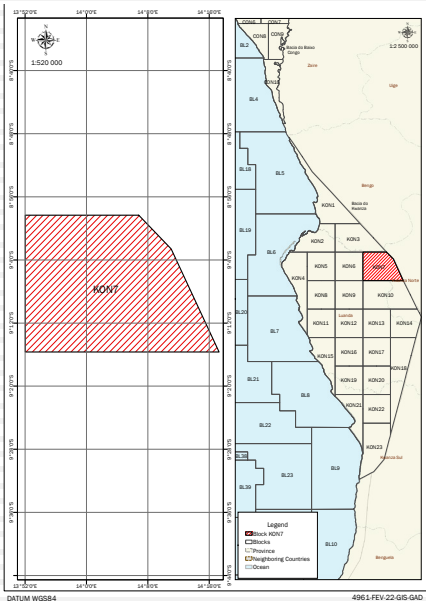
Pre-Salt

- **Source:** Shales from Cuvo Formation.
- **Reservoir:** Carbonates from Cuvo and sandstones wedging onto basement highs.
- **Trap:** Combined (Structural and Stratigraphic).
- **Seal:** Shales from Cuvo Formation and salt.





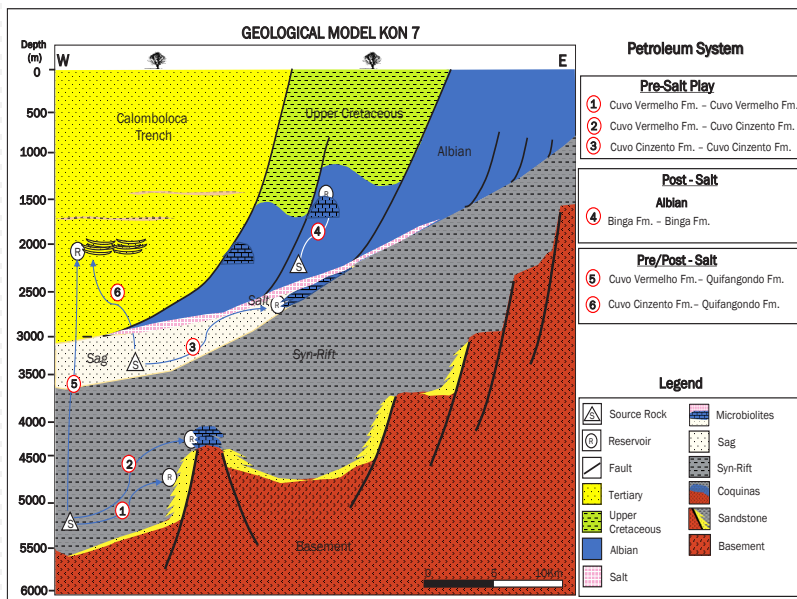
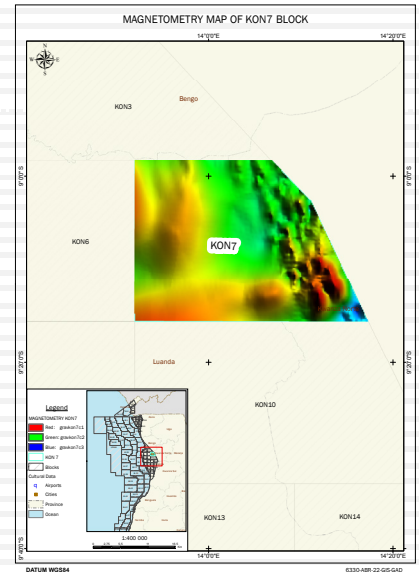
BLOCK KON 7



Block KON 7 is in the northeastern of onshore Kwanza Basin. It is limited to the north by Block KON 3, to the south by Block KON 10, to the east by outcrop of basement and to the west by Block KON 6.

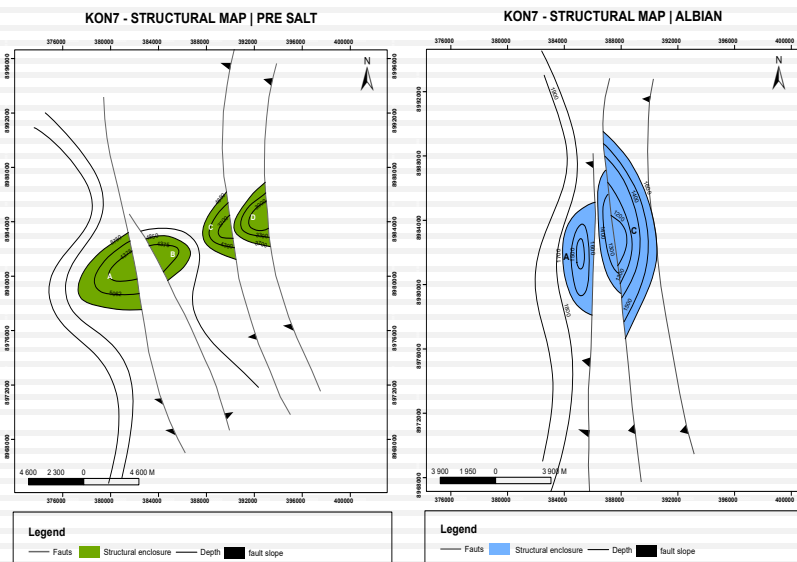
Area: 1207.86 Km²

- 1998: Aerogravimetric and magnetometry surveys by ENI.
- 2009-2012: 151,07 Km of 2D seismic acquired by Geokinectics
- 2010-2015: Geological mapping and geochemical conducted by Obrangol and Previsão Oil.



Pre-Salt: Characterized by horsts and grabens. The deep zones, mainly on the Calomboloca graben in the west, represents areas of hydrocarbon generation. The clays of Red Cuvo and Gray Cuvo Formations are potential source rocks, the sandstones of the Red Cuvo in pinchout, carbonates on top of the horsts and sandstones of the Gray Cuvo are the reservoir rocks. The salt layer and the shales from cuvo Formation represents the seal on this level.

Post-Salt: Represented by extensional structures (rafts and turtles backs) in the Albian with listric faults, because of salt tectonic. Clays limestones are potential source rocks, salt windows allow the migration of hydrocarbons from Pre-salt to Post-salt. In the Upper Cretaceous, the sediments, such as marls and gray clays, are potential source and seal rocks, sandstones of the Itombe and Teba Formations are potential reservoirs. At the Tertiary level, because of the sedimentary overload, it formed the Calomboloca trench to the west, with a predominance of potential reservoir sands in the Quifangondo Formation.



OPPORTUNITIES

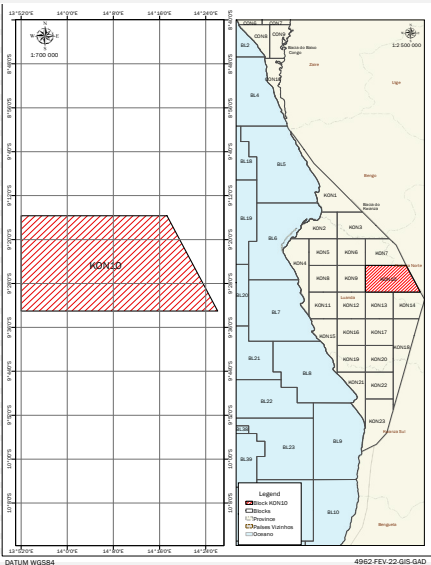
Post Salt

- **Source:** Shales from Cuvo and Binga Formation
- **Reservoir:** Carbonates from Binga and Catumbela Formation.
- **Trap:** Combined (Structural and Stratigraphic)
- **Seal:** Intraformational shales from Albian and Cabo Ledo Formation.

Pre Salt

- **Source:** Shales from Cuvo Formation.
- **Reservoir:** Carbonates from Cuvo and sandstones wedging onto basement highs
- **Trap:** Combined (Structural and Stratigraphic)
- **Seal:** Shales Cuvo Formation and salt.

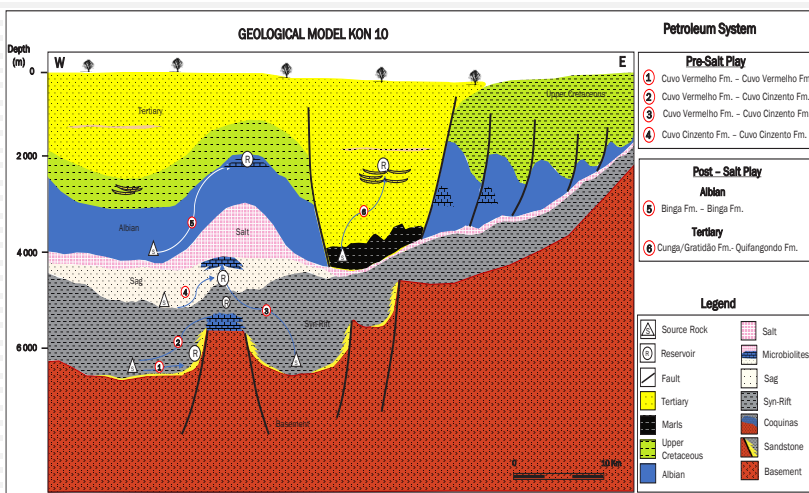
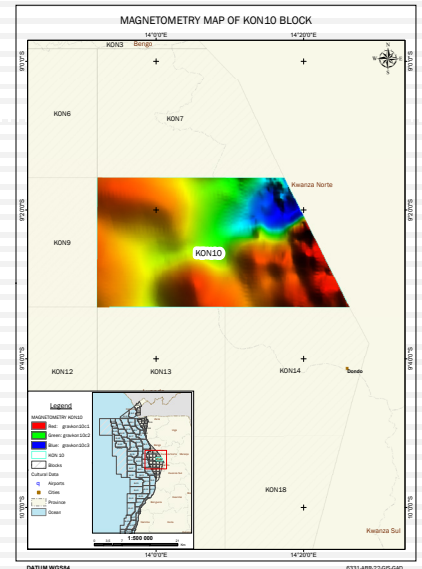
BLOCK KON 10



Block KON 10 is in the northwest of onshore Kwanza Basin. It is limited to the north by Blocks KON 7, to the south by Blocks KON 13 and KON 14, to the east by Precambrian Basement and to the west by Block KON 9.

Area: 1.734,78 km²

- **1921-1974:** Drilled four (4) wells by Sinclair, Petrangol and total.
- **1998:** Aerogravimetric and magnetometry surveys by ENI.
- **2009-2012:** 132,67 Km of 2D seismic acquired by Geokinectics.
- **2010-2015:** Geological mapping and geochemical conducted by Obrangol and Previsão Oil.

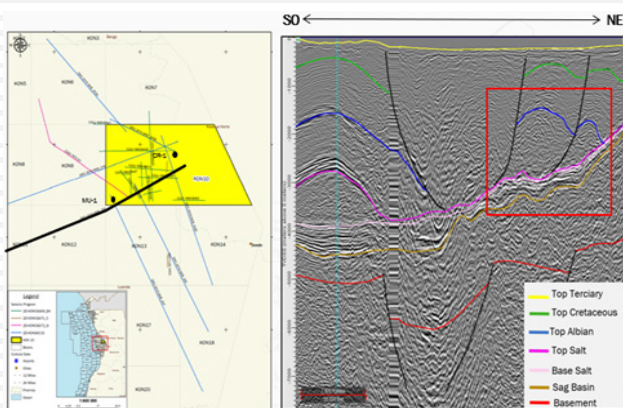


Pre-Salt: Represented by horsts and grabens. The deeps zones, represents areas of hydrocarbon generation. The clays of Red Cuvu and Gray Cuvu Formations are potential source rocks, the sandstones of the Red Cuvu in pinchout, carbonates on top of the horsts and sandstones of the Gray Cuvu are the reservoir rocks. The salt layer represents the seal on this level and we also have the shales from cuvu Formation.

Post-Salt: Characterized by extensional structures (rafts and turtles backs) in the Albian with listric faults, because of salt tectonic. Clays limestones are potential source rocks, salt windows allow the migration of hydrocarbons from Pre-salt to Post-salt. In the Upper Cretaceous, the sediments, such as marls and gray clays, are potential

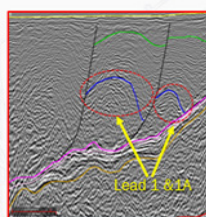
source and seal rocks, sandstones of the Itombe and Teba Formations are potential reservoirs. At the Tertiary level, because of the sedimentary overload, formed the trench, with a predominance of potential reservoir sands in the Quifangondo Formation.

OPPORTUNITIES



Seismic Line: SKB-220

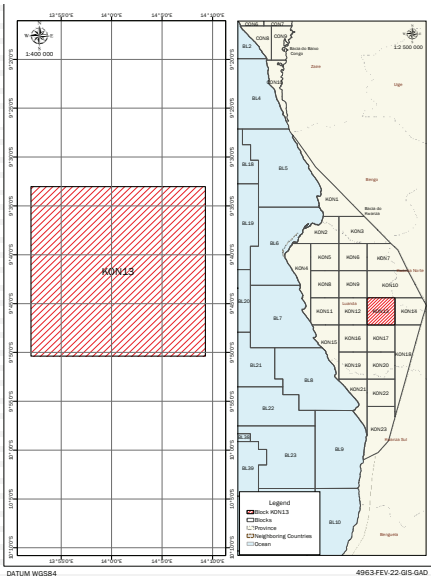
Post Salt Lead 1 & 1A



- **Source:** Shales from Binga Formation
- **Reservoir:** Carbonates from Binga and Catumbela Formation.
- **Trap:** Combined (Structural and Stratigraphic)
- **Seal:** Intraformational shales from Albian and Cabo Ledo Formation.

Well	Reservoir	Outcome
Carimba 2	Cabo Ledo	Oil and gas shows
Muxima 1	Binga	Presence of asphalt

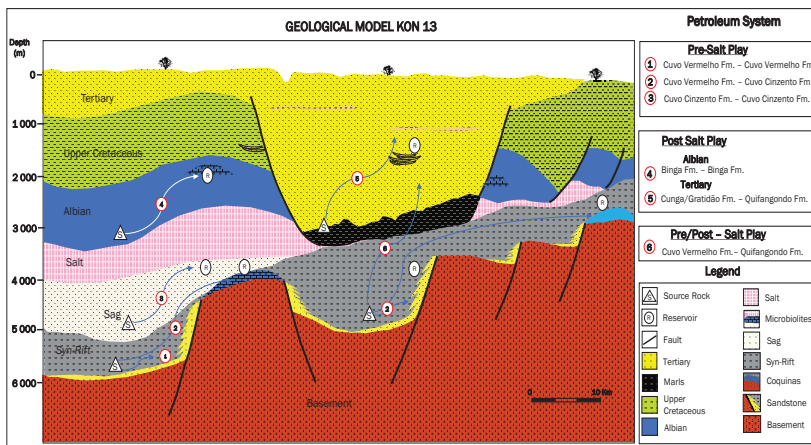
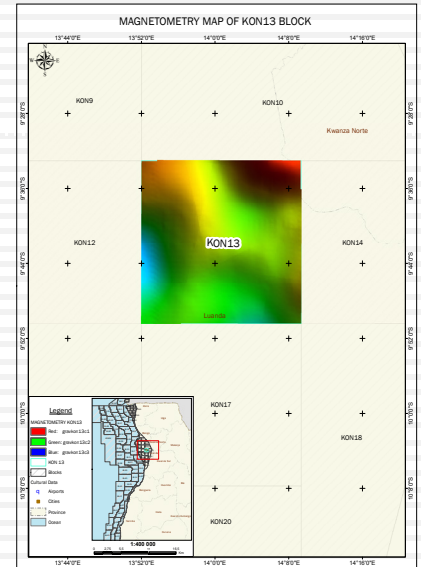
BLOCK KON 13



Block KON 13 is in the Central-Eastern part of onshore Kwanza Basin. It is limited to the north by Block KON 10, to the south by Block KON 17, to the east by Block 14 and to the west by Block KON 12.

Area: 1.010,73 km²

- 1969: Drilled two (2) exploration wells by Sinclair.
- 1998: Aerogravimetric and magnetometry surveys by ENI.
- 2009-2012: 135,7 Km of 2D seismic acquired by Geokinectics.
- 2010-2015: Geological mapping and geochemical conducted by Obrangol and Previsão Oil.

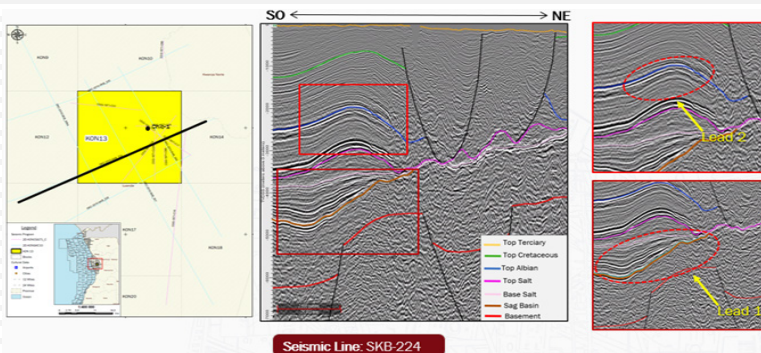


Pre-Salt: Characterized by horsts and grabens. The deeps zones, represents areas of hydrocarbon generation. The clays of Red Cuvo and Gray Cuvo Formations are potential source rocks, the sandstones of the Red Cuvo in pinchout, carbonates on top of the horsts and sandstones of the Gray Cuvo are the reservoir rocks. The salt layer represents the seal on this level and we also have the shales from cuvo Formation.

Post-Salt: Represented by extensional structures (rafts and turtles backs) in the Albian with listric faults, because of salt tectonic. Clays limestones are potential source rocks, salt windows allow the migration of hydrocarbons from Pre-salt to Post-salt. In the Upper Cretaceous, the sediments, such as marls and gray clays, are potential source and seal rocks,

sandstones of the Itombe and Teba Formations are potential reservoirs. At the Tertiary level, because of the sedimentary overload, formed the trench in the central part of the model, with a predominance of potential reservoir sands in the Quifangondo Formation.

OPPORTUNITIES



Post Salt

- **Source:** Shales from Cuvo and Binga Formation
- **Reservoir:** Carbonates from Binga and Catumbela Formation.
- **Trap:** Combined (Structural and Stratigraphic)
- **Seal:** Intraformational shales from Albian and Cabo Ledo Formation.

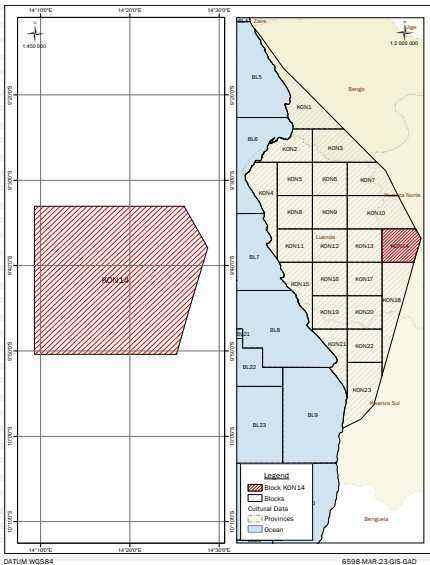
Pre Salt

- **Source:** Shales from Cuvo Formation
- **Reservoir:** Carbonates from Cuvo and sandstones wedging onto basement highs.
- **Trap:** Combined (Structural and Stratigraphic)
- **Seal:** Shales from Cuvo Formation and salt

Chio-1 Well

Sample	Formation	Ro (%)	TOC (%)	S1	S2	TMax (°C)	IP	HI (mg HC/gTOC)	Observation
Carote	Cuvo Cinzento	1,11	1,83	0,25	1,16	465	0,17	63,38	Mature SR
Carote	Cuvo Cinzento	n/y	1,06	0,16	0,73	458	0,17	68,86	Mature SR
Carote	Cuvo Vermelho	0,57	1,35	0,64	2,77	441	0,18	205,18	Mature SR

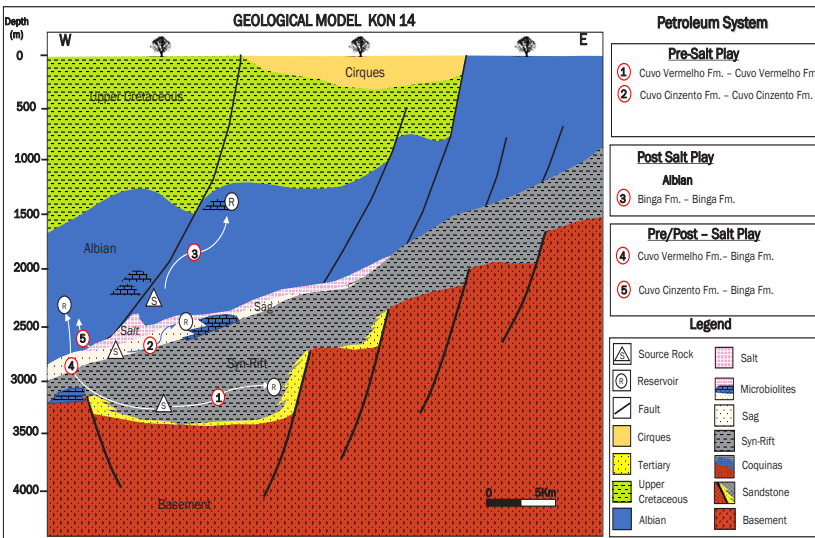
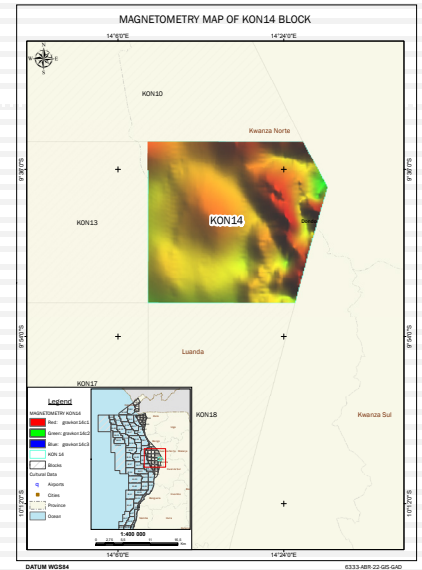
BLOCK KON 14



Block **KON 14** is in the southwest part of onshore Kwanza Basin. It is limited to the north by Block KON 10, to the south by Block KON 18, to the east by Precambrian basement and to the west by Block KON 13.

Area: 1.021,93 km²

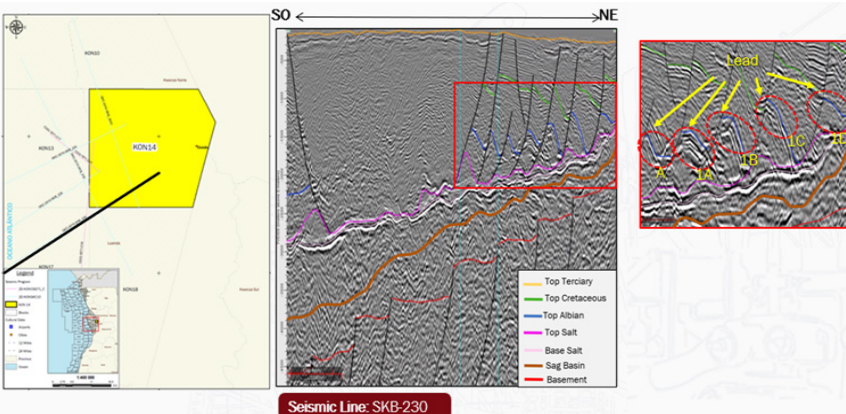
- 1998: Aerogravimetric and magnetometry surveys by ENI.
- 2009-2012: 151,07 Km of 2D seismic acquired by Geokinectics.
- 2010-2015: Geological mapping and geochemical conducted by Obrangol and Previsão Oil.



Pre-Salt: Represented by horsts and grabens. The deeps zones, represents areas of hydrocarbon generation. The clays of Red Cuvo and Gray Cuvo Formations are potential source rocks, the sandstones of the Red Cuvo in pinchout, carbonates on top of the horsts and sandstones of the Gray Cuvo are the reservoir rocks. The salt layer represents the seal on this level and we also have the shales from cuvo Formation.

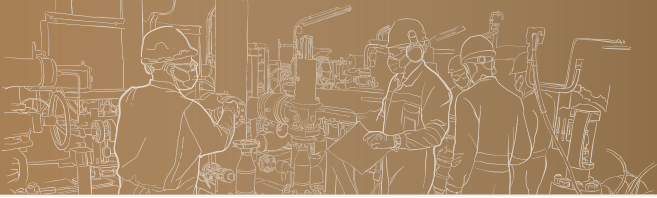
Post-Salt: Characterized by extensional structures (rafts and turtles backs) in the Albian with listric faults, because of salt tectonic. Clays limestones are potential source rocks, salt windows allow the migration of hydrocarbons from Pre-salt to Post-salt. In the Upper Cretaceous, the sediments, such as marls and gray clays, are potential source and seal rocks, sandstones of the Itombe and Teba Formations are potential reservoirs.

OPPORTUNITIES

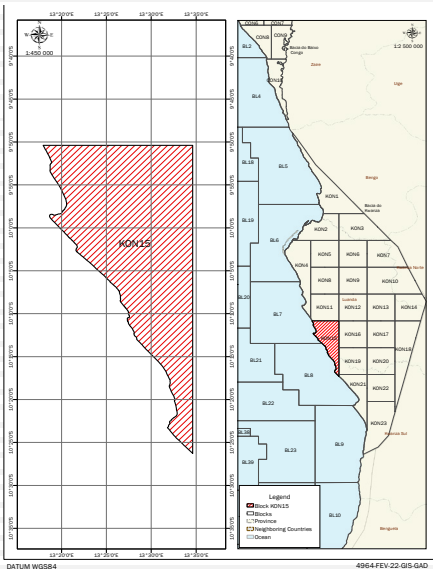


Post Salt Lead 1 & 1A

- **Source:** Shales from Cuvo and Binga Formation
- **Reservoir:** Carbonates from Binga and Catumbela Formation.
- **Trap:** Combined (Structural and Stratigraphic)
- **Seal:** Intraformational shales from Albian and Cabo Ledo Formation.



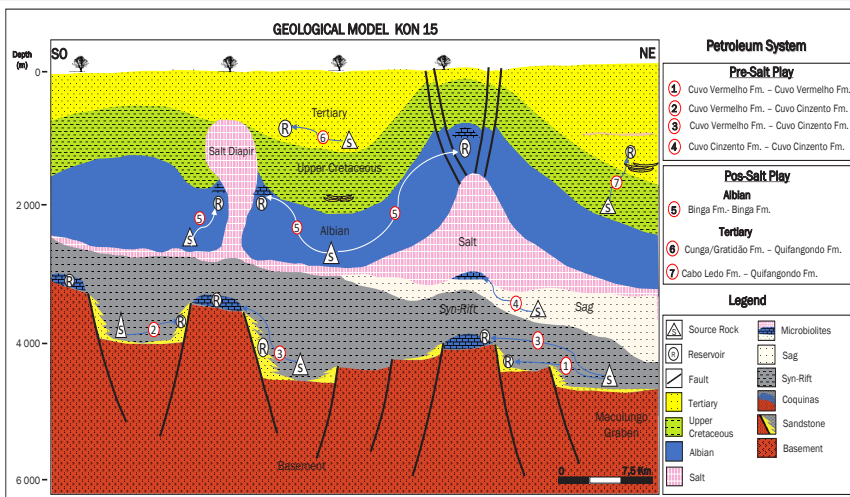
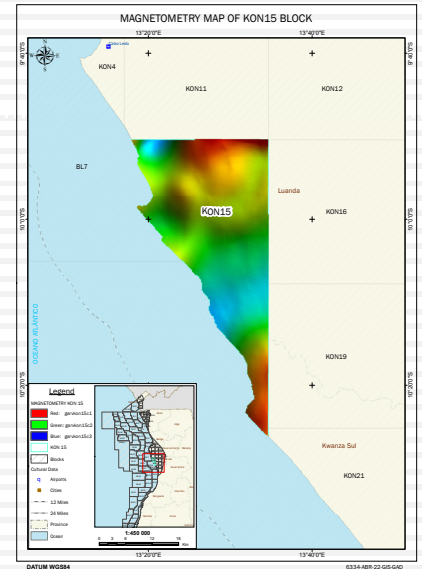
BLOCK KON 15



Block KON 15 is in the southwest part of onshore Kwanza Basin. It is limited to the north by Block KON 11, to the south by Block 8 of offshore Kwanza Basin, to the east by KON 16 and KON 19 and to the west by Block 7 and 8 of offshore Kwanza Basin.

Area: 97,8 km²

- 1921-1974: Drilled thirteen (13) wells.
- 1998: Aerogravimetric and magnetometry surveys by ENI.
- 2009-2012: 97,8 Km of 2D seismic acquired by Geokinectics.
- 2010-2015: Geological mapping and geochemical conducted by Obrangol and Previsão Oil.

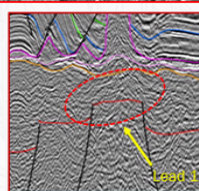
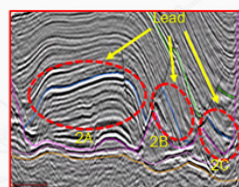
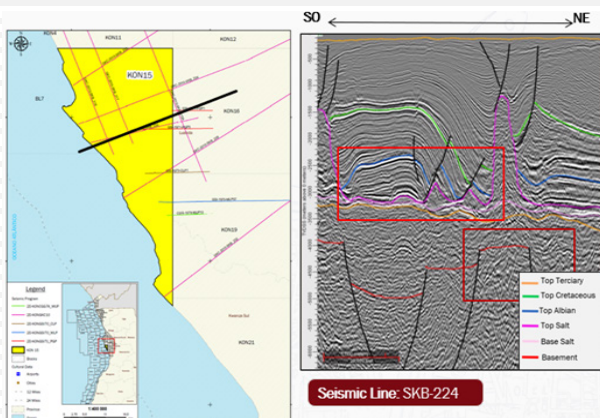


Pre-Salt: Characterized by horsts and grabens. The deeps zones, represents areas of hydrocarbon generation. The clays of Red Cuvo and Gray Cuvo Formations are potential source rocks, the sandstones of the Red Cuvo in pinchout, carbonates on top of the horsts and sandstones of the Gray Cuvo are the reservoir rocks. The salt layer represents the seal on this level and we also have the shales from cuvo Formation.

Post-Salt: Represented by anticlinal structures in the Albian with normal faults, because of salt tectonic and it's visible diapirus. Clays limestones are potential source rocks, salt windows allow the migration of hydrocarbons from Pre-salt to Post-salt. In the Upper Cretaceous, the sediments, such as marls and gray clays, are potential

source and seal rocks, sandstones of the Itombe and Teba Formations are potential reservoirs. The Tertiary is present in all extension with presence of channels.

OPPORTUNITIES



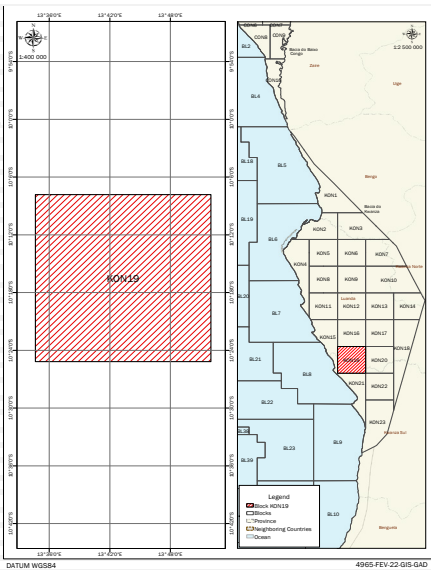
Post Salt

- **Source:** Shales from Cuvo and Binga Formation
- **Reservoir:** Carbonates from Binga and Catumbela Formation.
- **Trap:** Combined (Structural and Stratigraphic)
- **Seal:** Intraformational shales from Albian and Cabo Ledo Formation.

Pre Salt

- **Source:** Shales from Cuvo Formation.
- **Reservoir:** Carbonates from Cuvo and sandstones wedging onto basement highs
- **Trap:** Combined (Structural and Stratigraphic)
- **Seal:** Shales from Cuvo Formation and salt.

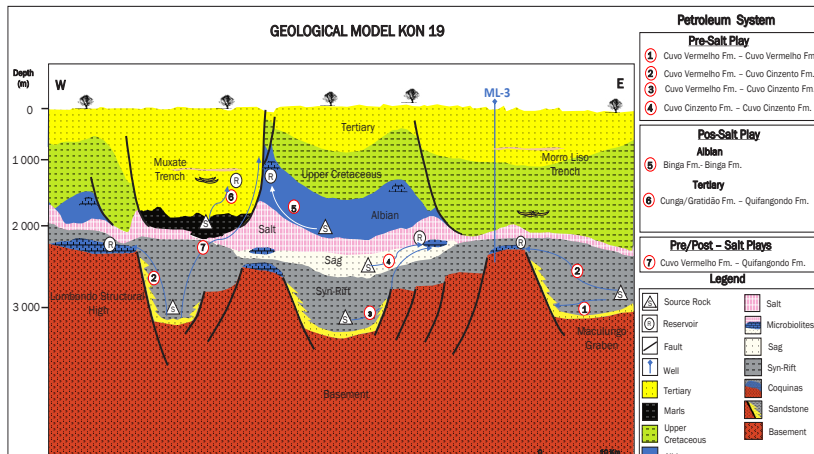
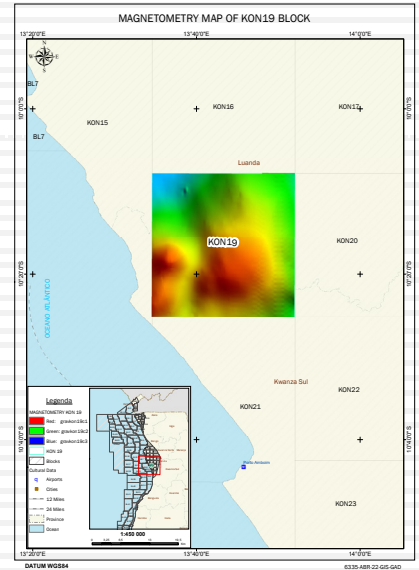
BLOCK KON 19



Block KON 19 is in the southwest part of onshore Kwanza Basin. It is limited to the north by Block KON 16, to the south by Block 21, to the east by KON 20 and to the west by Block 15.

Area: 1.007,82 km²

- 1960-1971: Drilled five (5) wells by Petrangol.
- 1998: Aerogravimetric and magnetometry surveys by ENI.
- 2009-2012: 121,062 Km of 2D seismic acquired by Geokinectics.
- 2010-2015: Geological mapping and geochemical conducted by Obrangol and Previsão Oil.

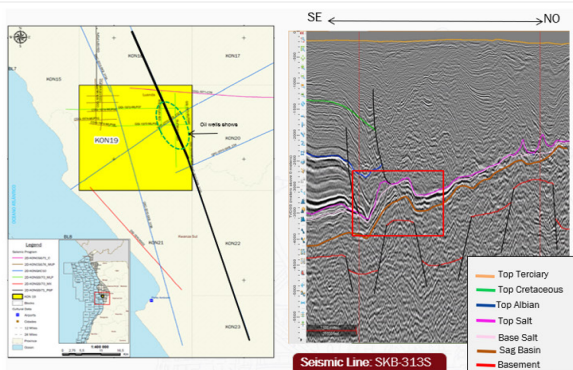


Pre-Salt: Represented by horsts and grabens and as reference we have the well-known Graben of Maculungo and the High Structural of Lumbondo. The deep zones, represents areas of hydrocarbon generation. The clays of Red Cuvo and Gray Cuvo Formations are potential source rocks, the sandstones of the Red Cuvo in pinchout, carbonates on top of the horsts and sandstones of the Gray Cuvo are the reservoir rocks. The salt layer and the shales from Cuvo Formation represents the seal on this level.

Post-Salt: Characterized by anticlinal structures in the Albian and couple of listric faults, as result of salt tectonic. Clays limestones are potential source rocks on this level but salt windows allow the migration of hydrocarbons from Pre-salt to Post-salt. In the Upper Cretaceous, the

sediments, such as marls and gray clays, are potential source and seal rocks, sandstones of the Itombe and Teba Formations are potential reservoirs. At the Tertiary level, because of the sedimentary overload, formed the well-know Muxate trench in the west and Morro Liso to the east.

OPPORTUNITIES



Pre Salt

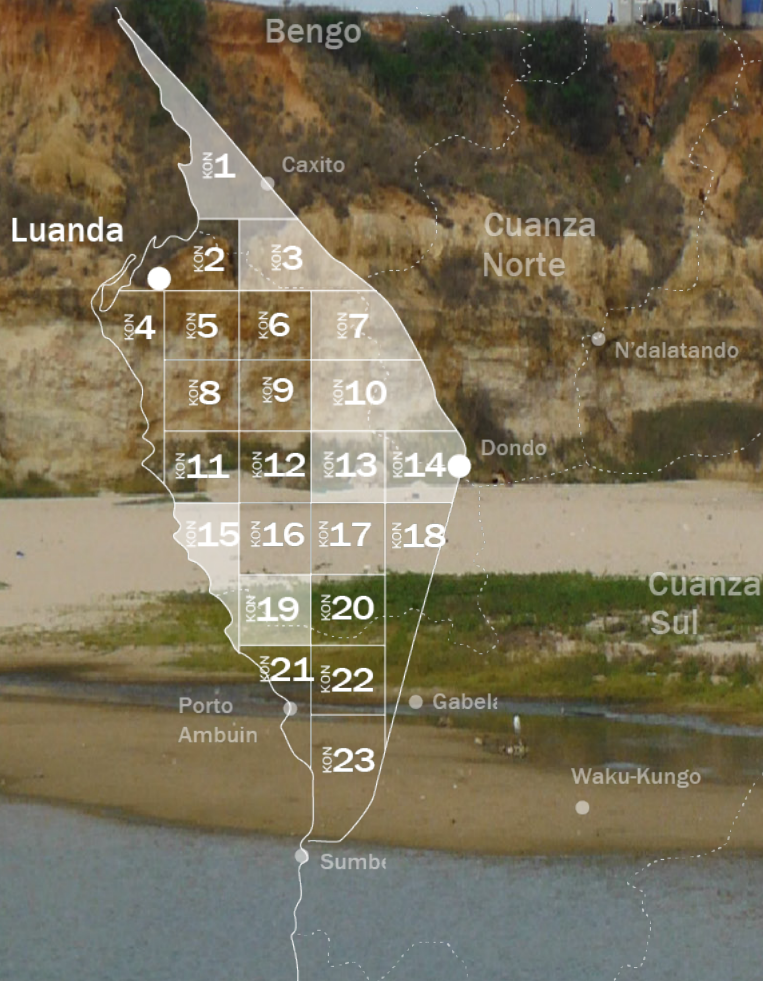
- **Source:** Shales from Cuvo Formation.
- **Reservoir:** Carbonates from Cuvo and Formation.
- **Trap:** Combined (Structural and Stratigraphic)
- **Seal:** Evaporites from salt Formation.

Exploration well with HC evidence (1960-1971)

Well	Reservoir (Target)	Outcome
Morro Liso-1	Primary: Cabo Ledo Secondary: Gray Cuvo	Oil and Gas shows
Morro Liso-2		
Morro Liso-3		
Morro Liso-4		



ONSHORE KWANZA BASIN





ANGOLA



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