



COLOMBIA ROUND 2021

UNDEVELOPED ALREADY DISCOVERED RESERVOIRS & INCORPORATED AREAS: LOWER MAGDALENA VALLEY BASIN

27/08/2021

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	Coral -3
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	Guamito – La Pinta
	Brillante
	San Ángel

Incorporated Area: VIM-46

Location

Database

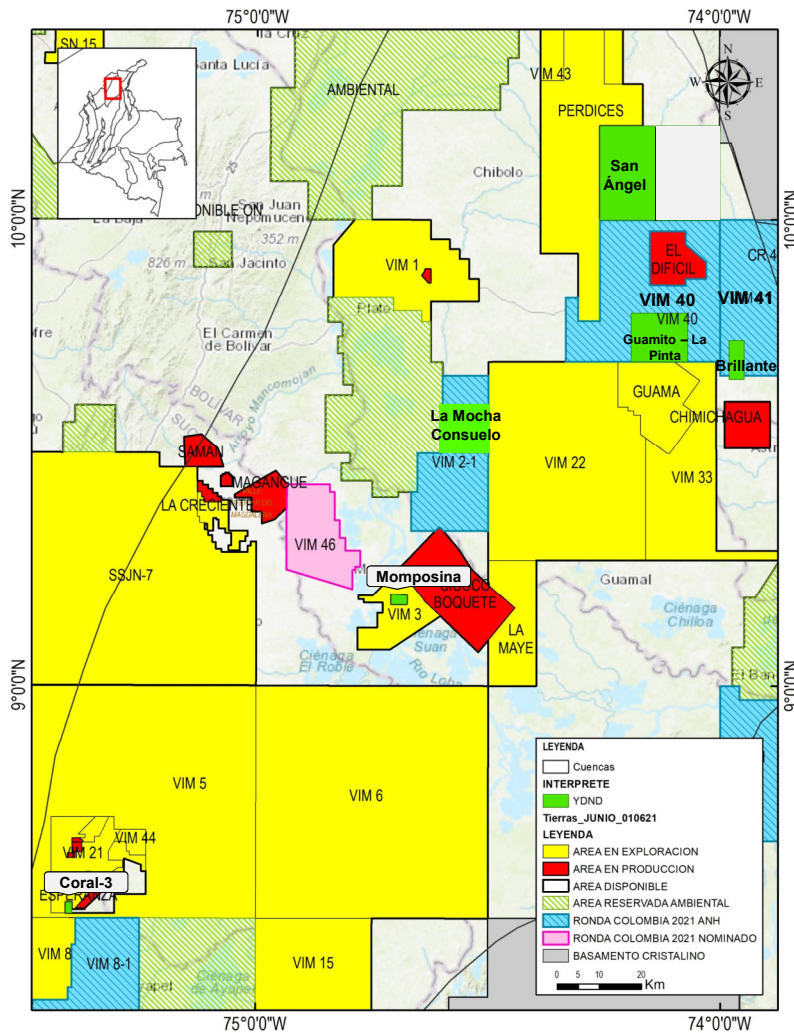
Seismic Interpretation

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INTRODUCTION

LOCATION



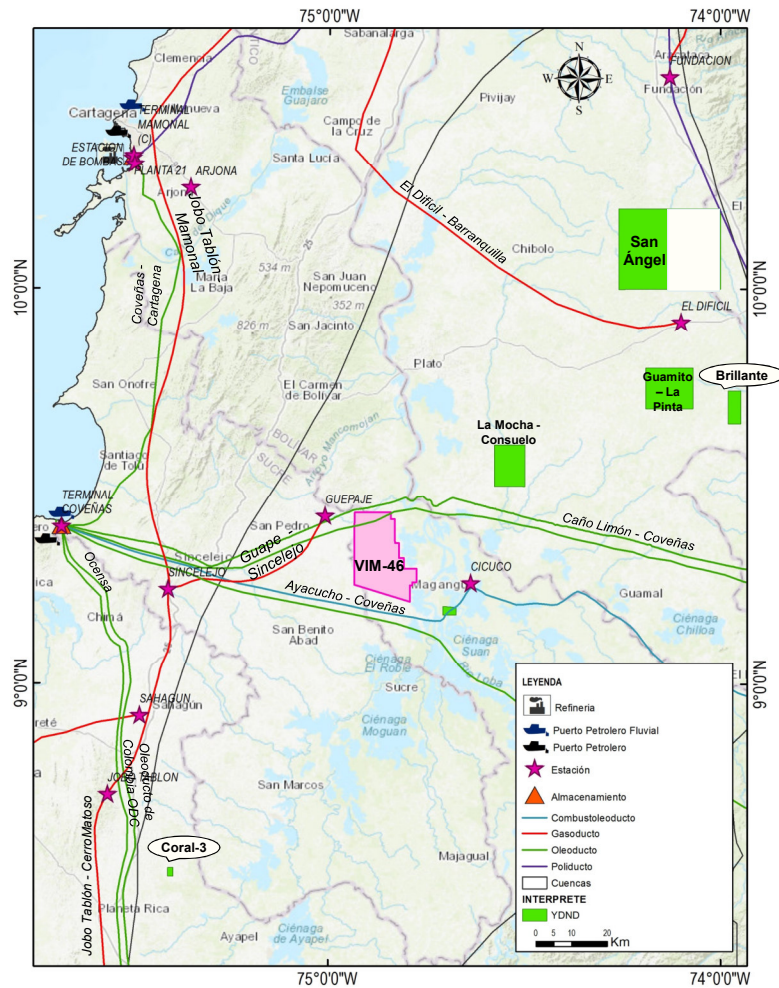
Undeveloped Already Discovered Reservoirs

- Coral-3 (Area for nomination)
- Momposina-1 (Area for nomination)
- La Mocha – Consuelo: VIM 2-1 (Block offered in the Colombia Round 2021)
- Guamito – La Pinta: VIM 40 (Block offered in the Colombia Round 2021)
- Brillante: VIM 41 (Block offered in the Colombia Round 2021)
- San Ángel (Area for nomination)

Incorporated Area

- VIM 46 Block

INFRASTRUCTURE



Main Infrastructure

Gas Pipeline

El Difícil – Barranquilla

Guape - Sincelejo

Jobo Tablón – Cerromatoso

Oil Pipeline

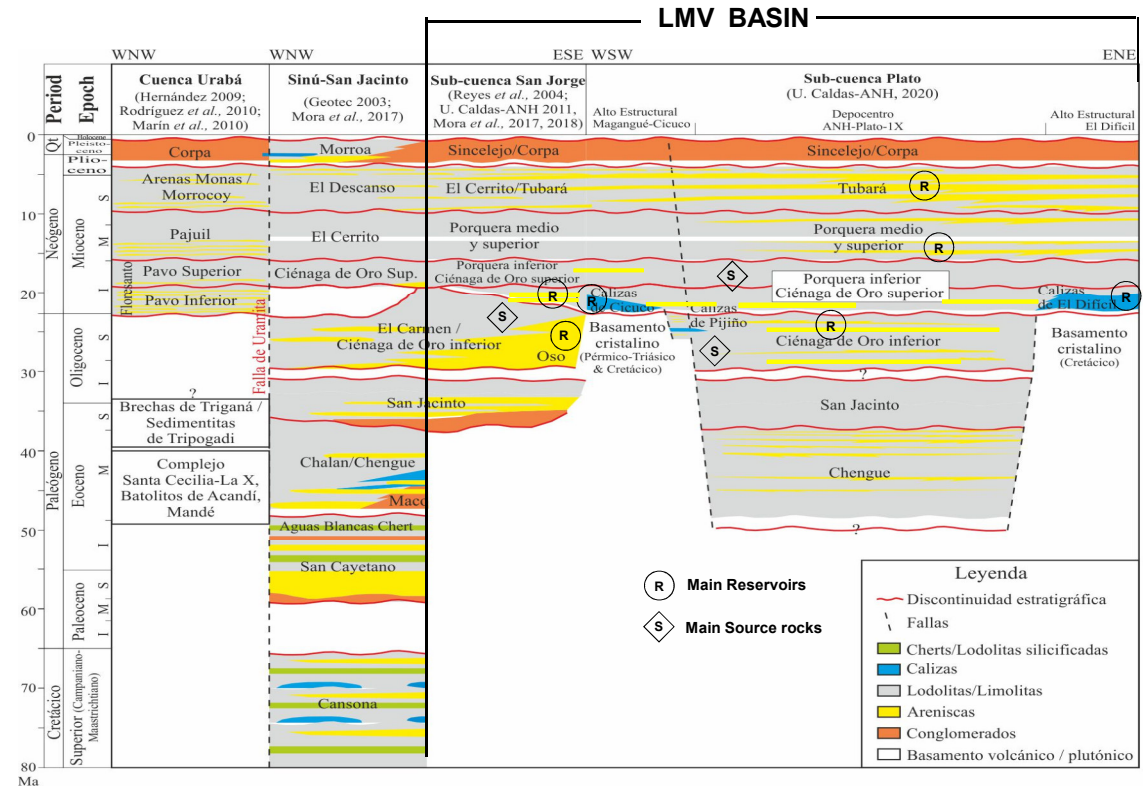
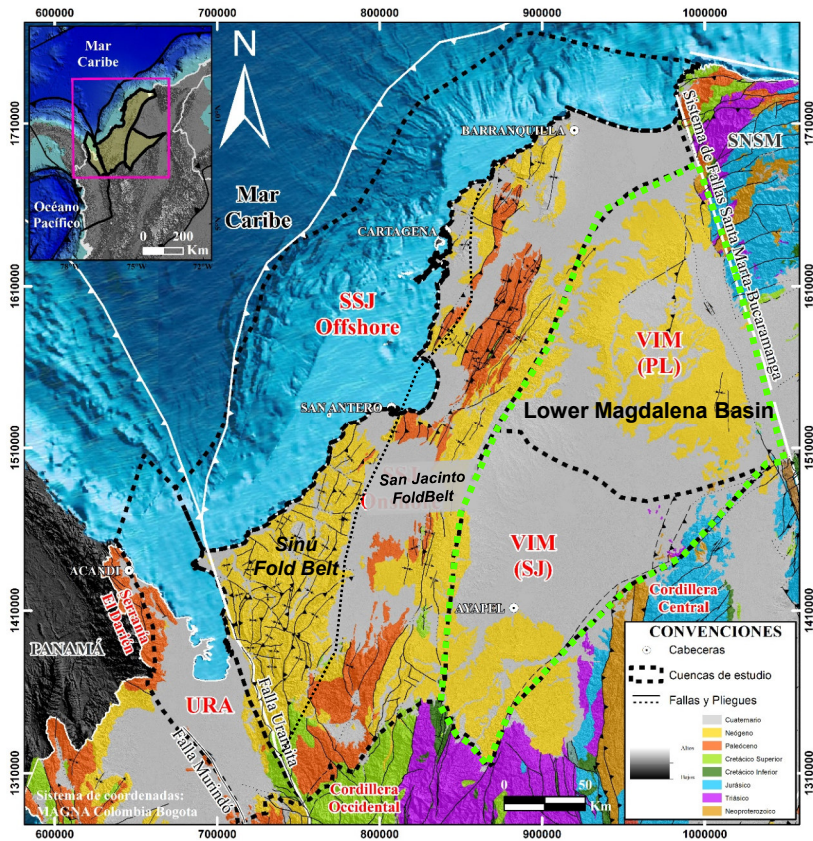
Caño Limón – Coveñas

Oleoducto De Colombia – ODC

Ocasá

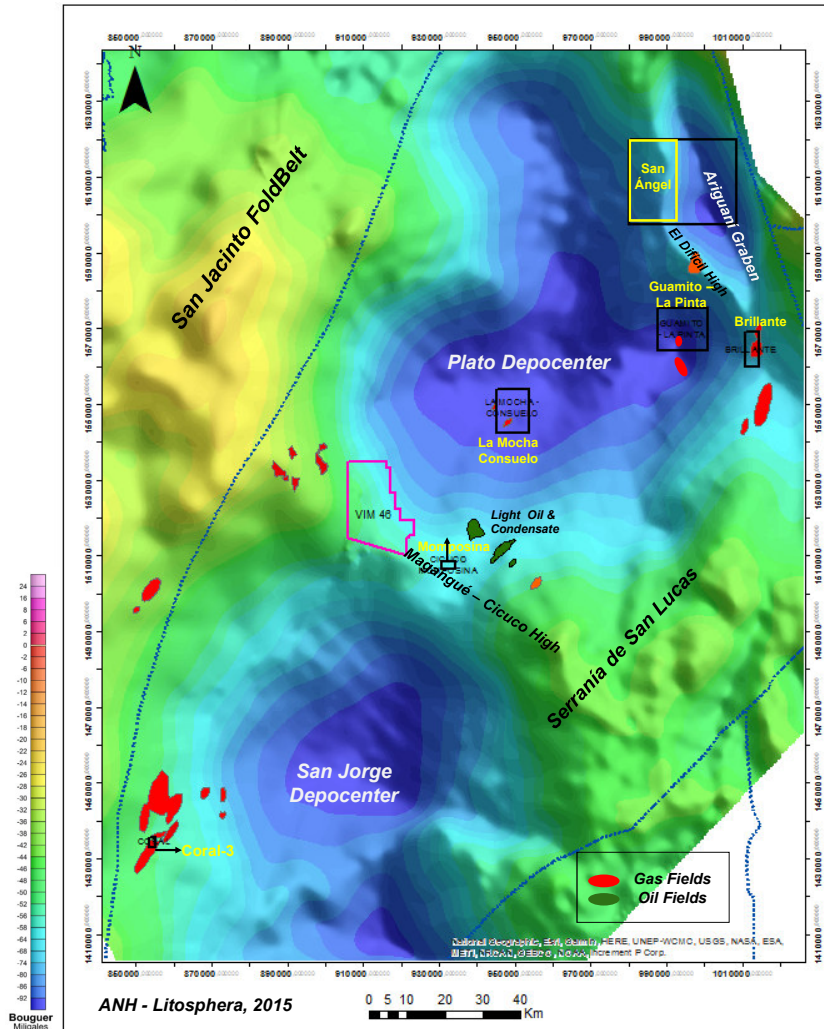
GEOLOGICAL FRAMEWORK

Geological Setting and Stratigraphic Chart



Taken from Universidad de Caldas – ANH, 2020

Bouguer Anomaly Map



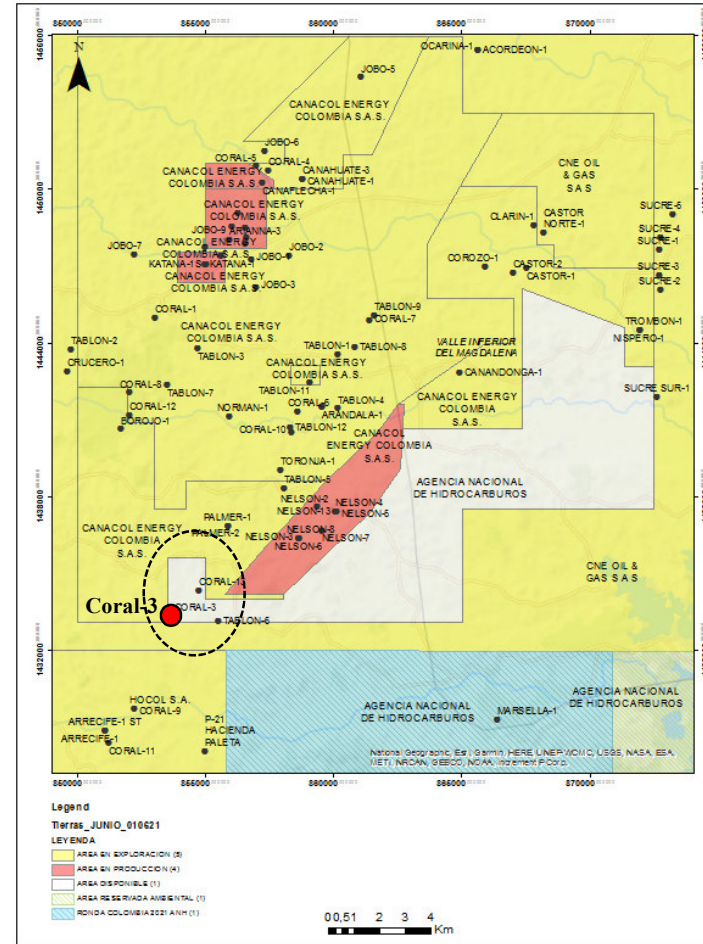
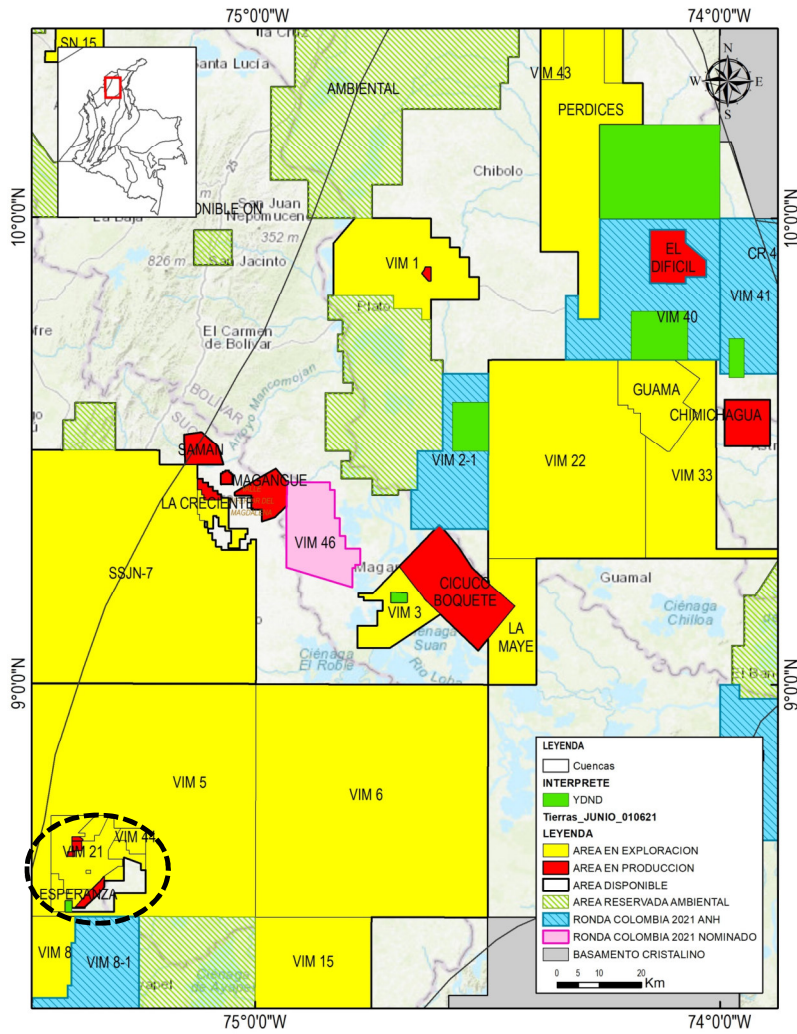
Main Morphological Features in LMV Basin

- The positive anomaly representing the San Jacinto Fold Belt
- El Dificil High
- Plato Depocenter – Basement depths > 7000 m
- Magangué – Cicuco High
- San Jorge Depocenter – Basement Depths > 5000m

UNDEVELOPED ALREADY DISCOVERED RESERVOIRS

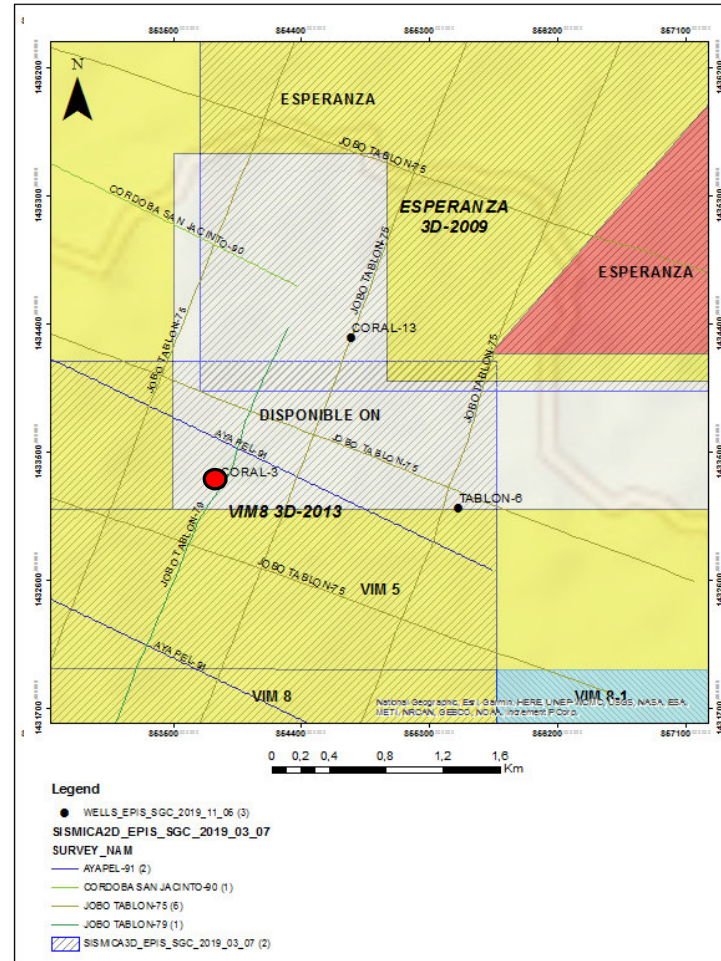
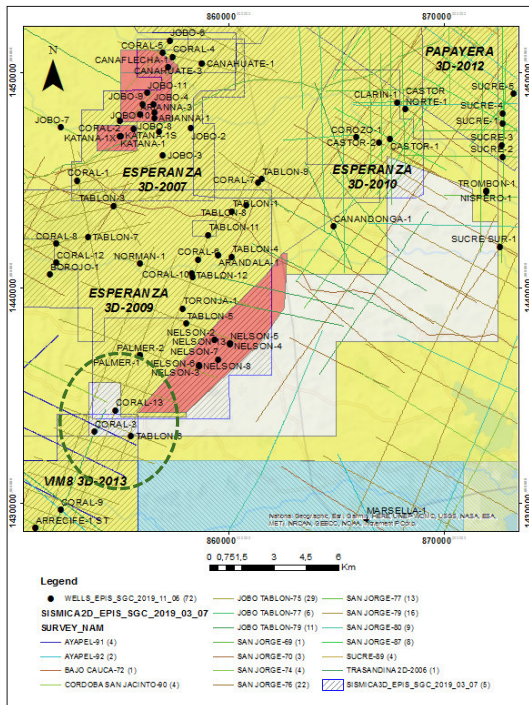
CORAL AREA

Location



- Municipalities: Pueblo Nuevo
- Córdoba department

Database: Seismic & Wells



SEISMIC

- 3D Seismic Surveys:
 - Esperanza 3D-2009
 - VIM 8 3D-2013

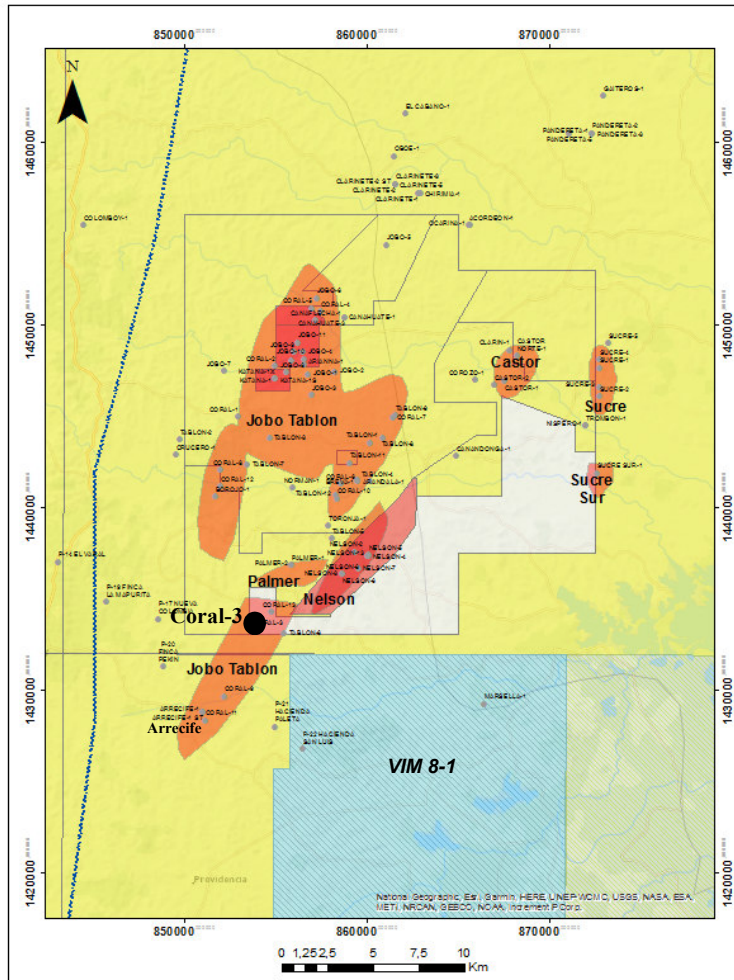
2D Seismic Surveys (8 lines):

- Ayapel-91
- Córdoba San Jacinto-90
- Jobo Tablón-75
- Jobo Tablón-79

WELLS

WELL	TD (ft)	YEAR	STATUS	COMPANY
CORAL-3	8529	1977	PRODUCER	INTERNATIONAL PETROLEUM COL
CORAL-13	7835	1980	PLUGGED AND ABANDONED	GEOPRODUCTION
TABLÓN-6	8316	1962	DRY & ABANDONED - NO TESTS	INTERCOL

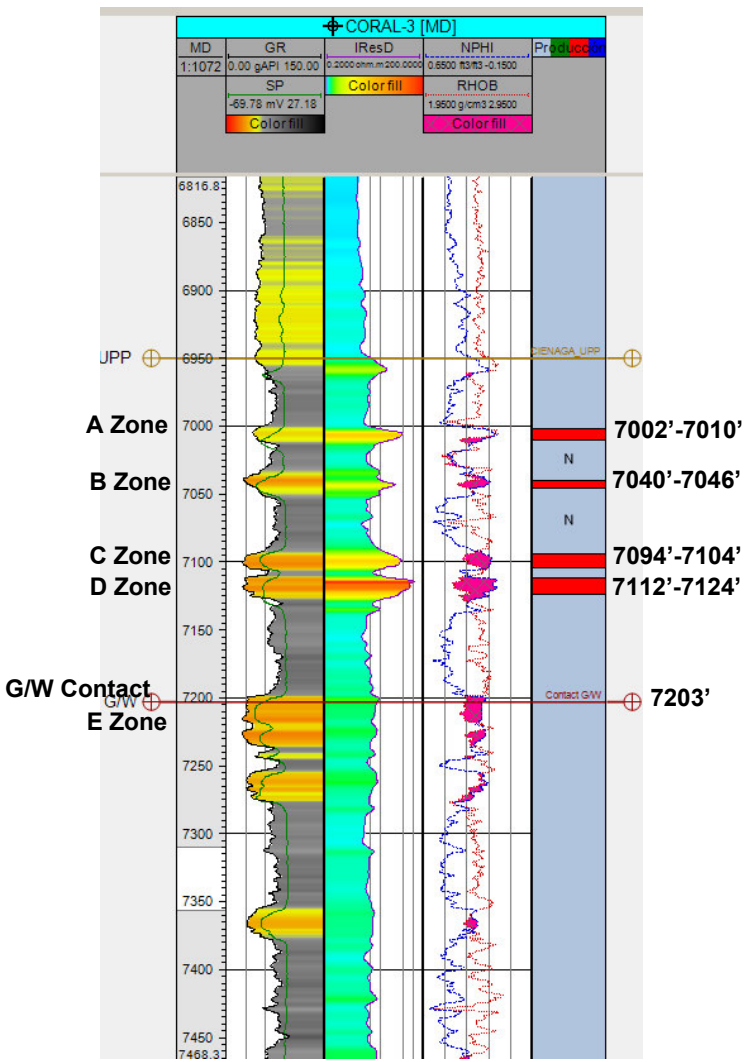
Near Fields



FIELD	CONTRACT	EXPLORATION PLAY	FLUID	PRODUCTION	YEAR	OGIP (Bcf)
→ JOBO TABLÓN	VIM-21	UPPER C ORO - PORQUERO	GAS	193 BCF (cumm prod-2011)*	1947	
SUCRE	VIM-5	C ORO	GAS	20,4 (cumm prod-2011)*	1977	
CASTOR	ESPERANZA	C ORO	GAS	14.1 BCF (cumm prod. -2011)	1980	
SUCRE SUR	VIM-5	C ORO	GAS	14,1 BCF (Cumm. Prod - 2011)*	1981	
→ NELSON	ESPERANZA	C ORO	GAS	120 BCF		342,76
CLARINETE	VIM-5	UPPER C ORO - PORQUERO	GAS	24.7 MMscfd	2014	247,93
→ ARRECIFE	VIM-8	UPPER C ORO - PORQUERO	GAS	3-10MMscfd (Tests)	2018	
PANDERETA	VIM-5	UPPER C ORO - PORQUERO	GAS			121,83
OBOE		UPPER C ORO - PORQUERO	GAS			296,56
ARIANNA	ESPERANZA	C ORO	GAS		2011	8,05
CAÑAFLECHA	ESPERANZA	C ORO	GAS		2011	1,82
CAÑAHUATE	ESPERANZA	C ORO	GAS			28,51
NISPERO	ESPERANZA	C ORO	GAS			27,90
→ PALMER	ESPERANZA	C ORO	GAS			53,50
TORONJA	VIM-21	C ORO	GAS			32,67
OBOE	VIM-5	C ORO	GAS			296,56
KATANA	ESPERANZA	C ORO	GAS			13,57

* Taken and modified from ANH-Eafit (2011)

Production Tests



CORAL-3

PRODUCTION TESTS SUMMARY

ISOCRONAL TESTS

Intervals: 7,112-24' ; 7,094-104; 7,040-48; 7,002-10'.

DATE	HOURS	CHOKE (1/64")	SITHP (PSI)	FTHP (PSI)	RATE (MMCFGD)	LIQUIDS (GALS)
April 21-22	S.I.		2,728			
April 21-22	4	10		2,697	2.3	None
April 21-22	4	12		2,677	3.2	None
	4	14		2,669	4.0	11
	4	16		2,644	5.0	15
	2	S.I.	2,728	(Stabilized)		
	4	20		2,650	4.6	2
April 28-30	2-1/2	S.I.	2,733			
	4-1/2	12		2,706	2.1	-
	4-1/2	15		2,670	4.3	-
	4	18		2,625	6.1	-
	4	22		2,525	8.1	-
	6-1/2	S.I.	2,733			
	4	20		2,578	7.0	-

Coral-3 was completed as a gas producer with an initial rate of 6,1 MMCSF/D on a 18/64" choke with a WHFP = 2,625 PSI from the Ciénaga de Oro, Gross Interval: 7002' – 7124' (122').

Volumetrics by Previous Operator

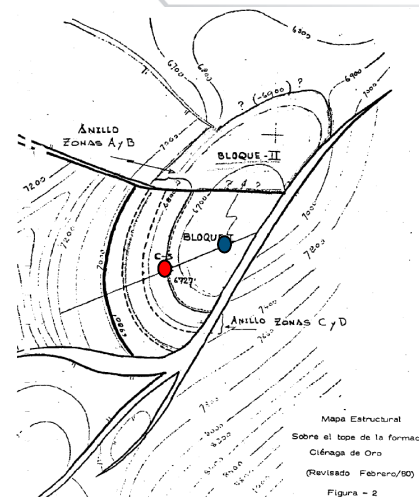


CORAL-3 BLOQUE-1 (Probado y Probable)

CALCULO DE RESERVAS - METODO VOLUMETRICO

ZONAS	NGS (Pies)	Area (Acres)	p (%)	Swl (%)	GI (BPC)	Máximas Reservas Recuperables por Coral-3 (BPC)			Máximo Recobro Final (BPC)	Reservas Producibles Nuevo Pozo (BPC)	
						Recuperación por Empuje de Agua (70%)	Recuperación por Expansión De 3180psia a 1000psia	De 3180psia a 1600psia			
A y B	19	328(1)	16	31	6.1	4.27	-	-	4.27	4.88	0.61
	19	373(2)	16	31	6.6	-	-	-	4.80	5.52	0.72
Subtotal Zonas A y B		701			13.0	4.27	-	-	9.07	10.40	1.33
C y D	27	169(1)	15	25	4.6	3.22	-	-	3.22	3.68	0.46
	27	373(2)	15	25	10.0	-	-	3.90	3.90	8.00	4.10
Subtotal Zonas C y D		542			14.6	3.22	-	3.90	7.12	11.68	4.56
Total Zonas A, B, C y D	46				27.6	7.49	-	3.90	18.19	22.08	5.89
E	18	227	16	35	3.0	-	-	-	-	-	-
GRAN TOTAL					31.4	7.49	-	3.90	18.19	22.08	8.55

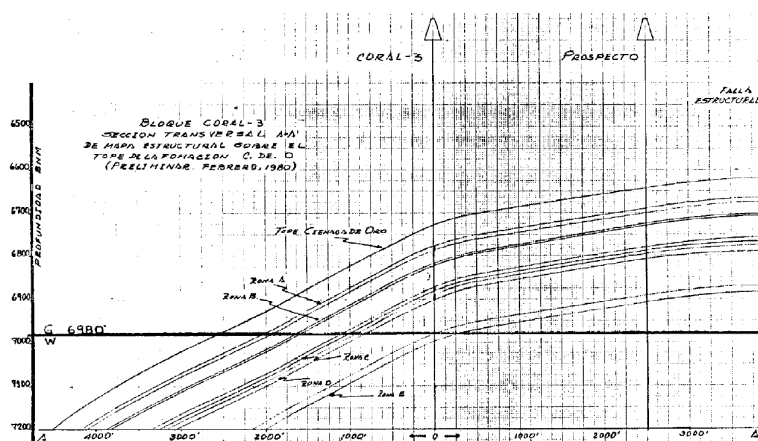
Source: Petroleum Engineering Report - Intercol, 1980



A new well drilled in the highest part of the structure could produce a total of 8.5 BCF from Coral-3 area.

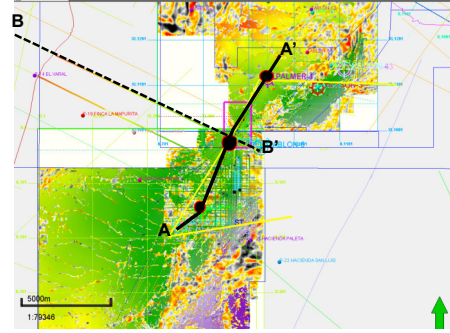
METHOD	OGIP (BCF)
Rock Volume	27,6
Material Balance	29,0

- Maximum possible recovery for the Coral-3 well before being invaded by the water: **16,2 BCF** through the open zones, recovery of 58% of OGIP (27,6 BCF).
- Final Maximum recovery for all the block: **22,1 BCF**, it corresponds to 5,9 BCF recoverable.
- The E zone (water in Coral-3) could produce **2,5 BCF of gas**, which would be recoverable only by drilling a new well up dip to the Coral-3.
- A new well at the top of the structure could produce a total of **8,5 BCF of gas** in the Coral-3 area.



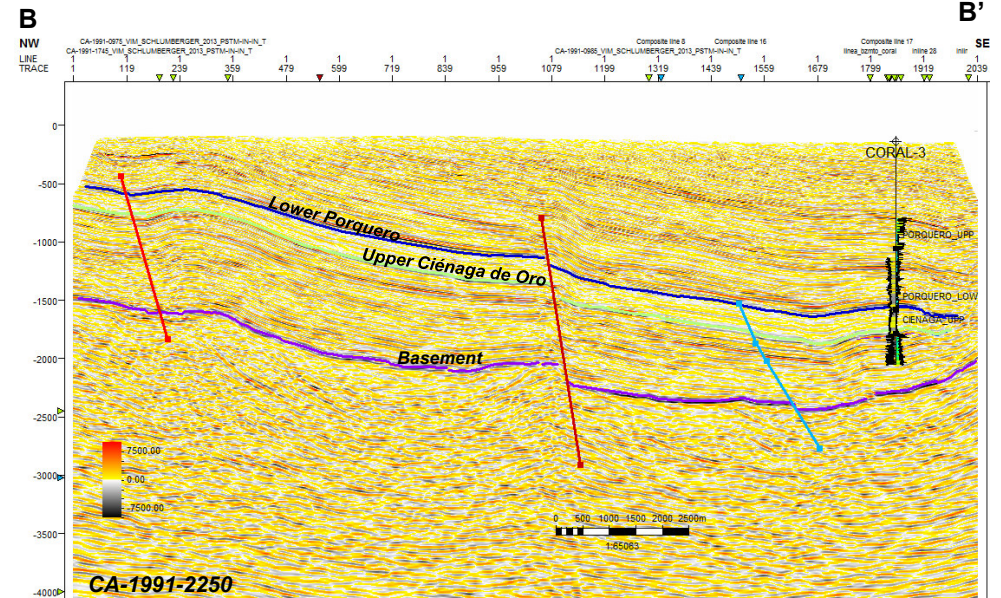
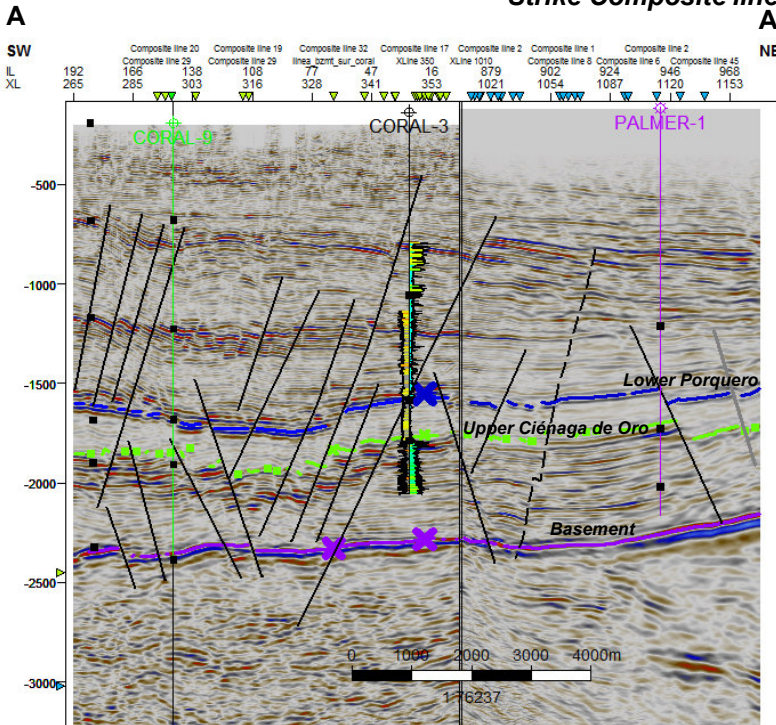
The Gas - water contact used to define the volumetric calculation areas is **6980' (sea level) = 7203'**, by electrical records. From the pressure gradients the GWC could be 7026' SLB = 7249', 46' deeper. It would increase reserves by 10% (GI = 30.4 BPC)

Seismic Interpretation



Strike Composite line

Dip line

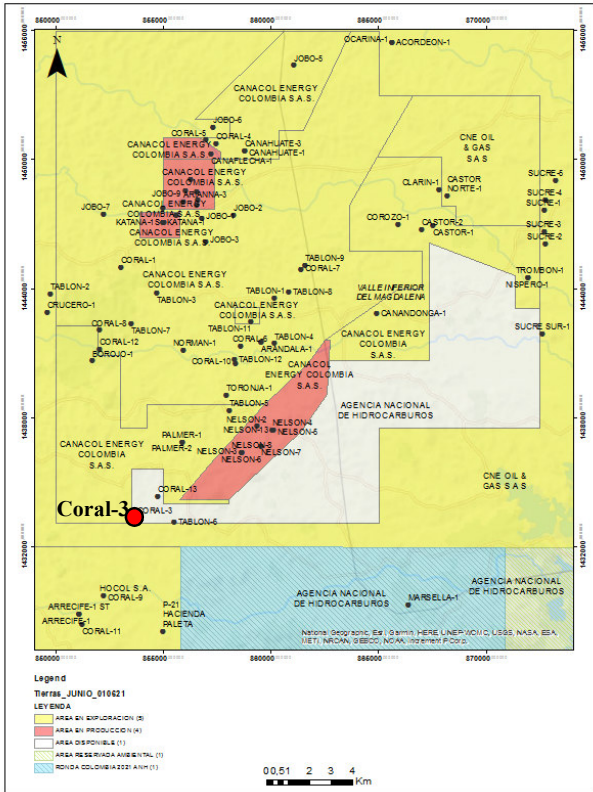


ANH Evaluation and Volumetrics Ciénaga de Oro top

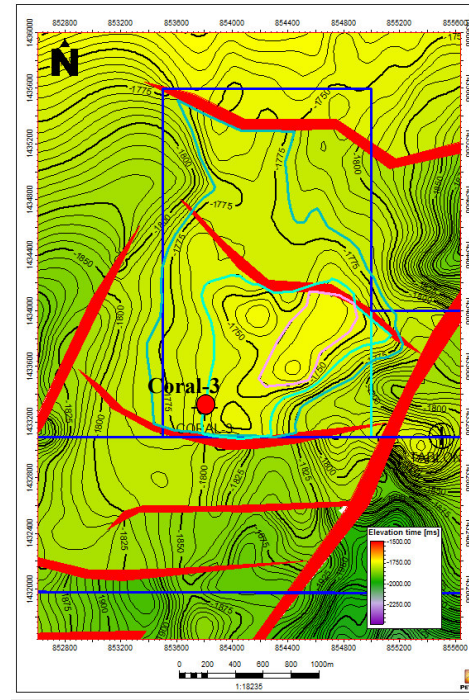


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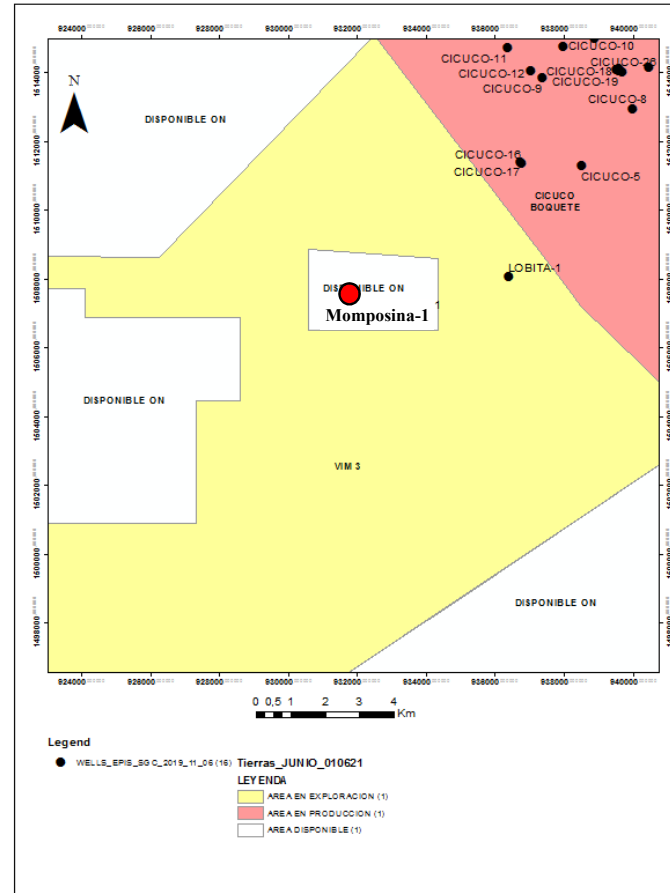
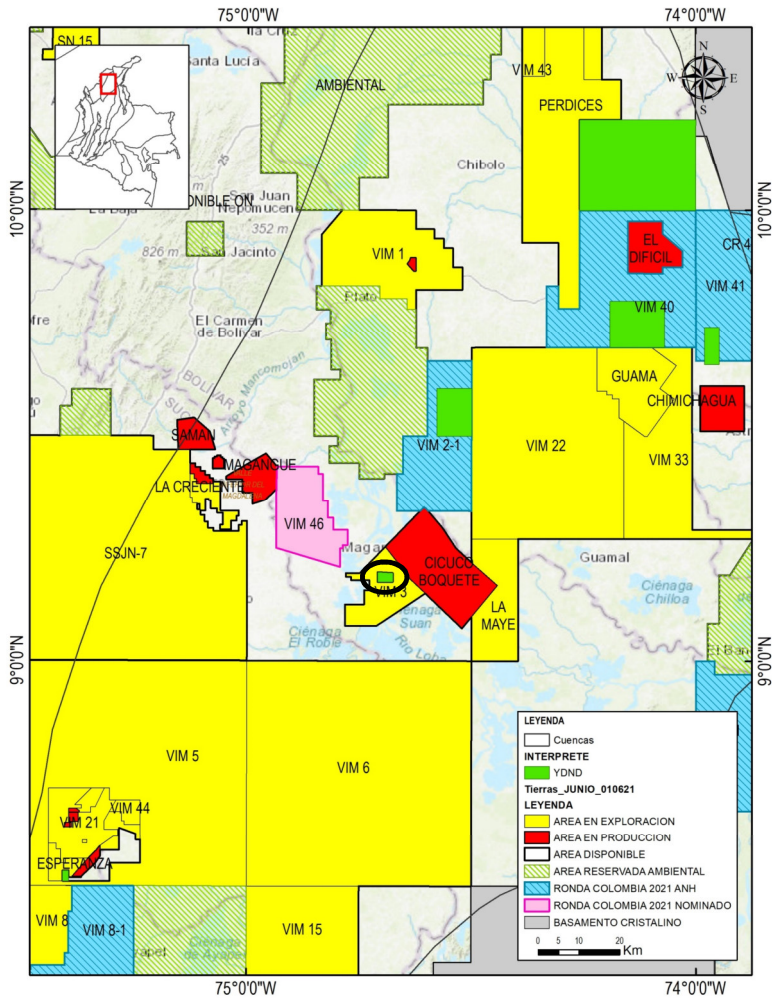
TWT Map Upper Ciénaga de Oro



PROSPECT OR LEAD	AREA (Acres)	THICKNESS (Net Pay) (Ft)	POROSITY (%)	GS (%)	Bg	OGIP (Bcf)	RF (%)	CONTIGENT RESOURCES (Bcf)
Coral CDO SS Low Estimated	61	20	0,18	0,80	0,0097	0,79	0,8	0,63
Coral CDO SS Best Estimated	237	30	0,20	0,85	0,0097	5,43	0,85	4,61
Coral CDO SS High Estimated	652	40	0,25	0,90	0,0097	26,35	0,9	23,72

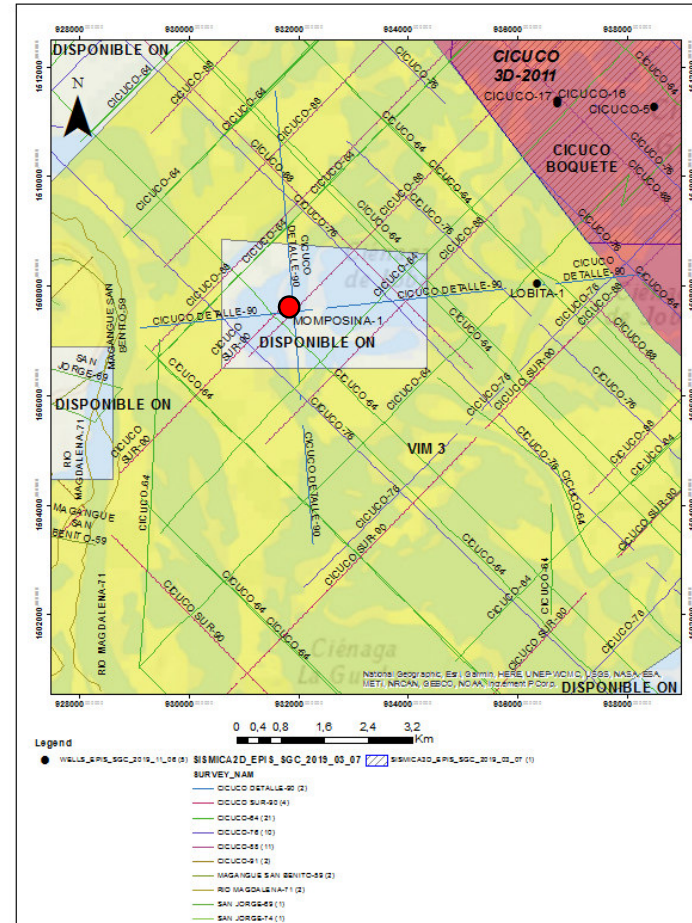
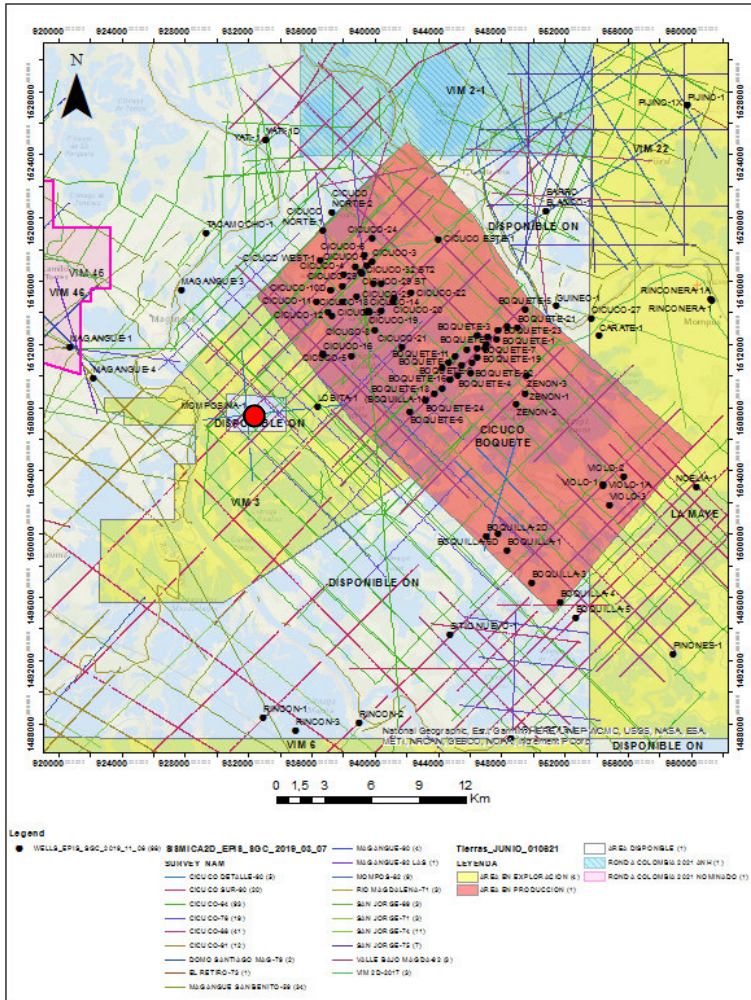
MOMPOSINA AREA

Location



- Momposina Area: 836 Has.
- Municipalities: Cicuco, and Mompós.
- Bolívar department

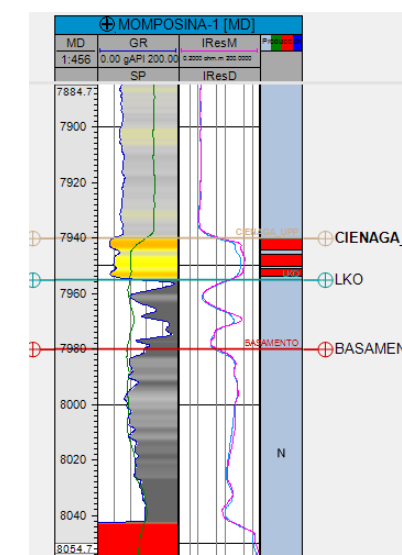
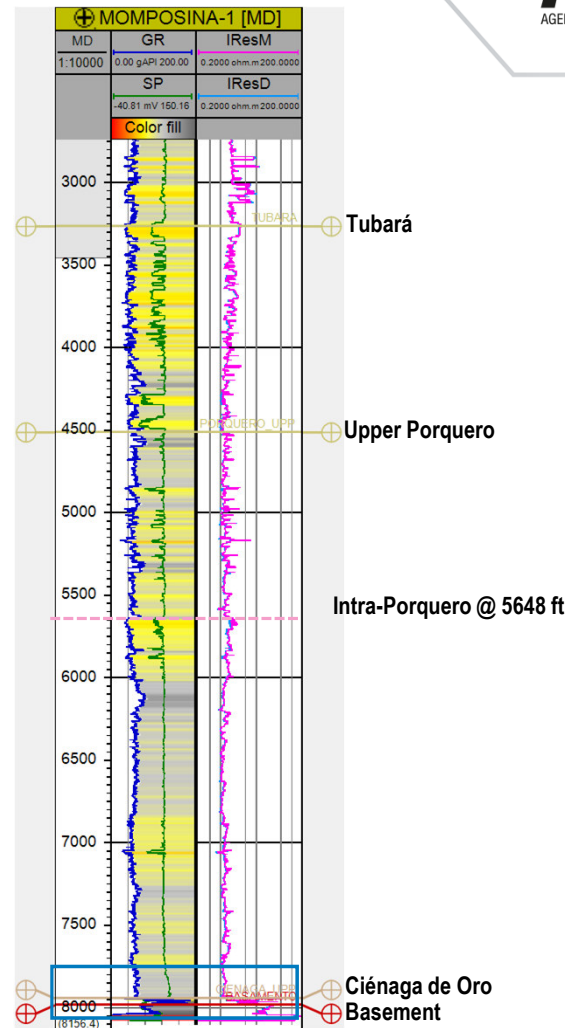
Database



- **SEISMIC**
- **2D Seismic Surveys (14 lines)**
- Cicuco-64
- Cicuco-76
- Cicuco-88
- Cicuco Detalle-90
- Cicuco Sur-90
- **WELLS**
- Mompósina-1

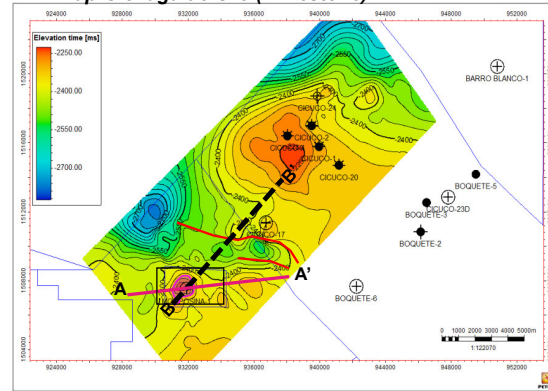
Momposina-1 Well

- Company: Ecopetrol
- TD: 8082'
- Spud date: 16/03/1990
- Completed: 23/04/1990
- Structure: Structural trap
- Reservoir: Limestones and sandstones – Ciénaga de Oro Fm.
- Production Date: May, 1998 – Sep, 2009
- OGIP: 17 BCF OOIP: 0,5 MMbbls**
- Accumulated volumes: **93,308 bbls of crude, 2,98 BCF of gas and 808,674 bbls of water.**
- Remaining reserves: 11 BCF**
- It was closed by low volume gas production, presence of H₂S and high water production.
- October 17th of 2014: Voluntary Termination of the Agreement of Exploitation of Hydrocarbons Cicuco-Momposina, and on the 22nd of January of 2018 the Relinquishment was signed.



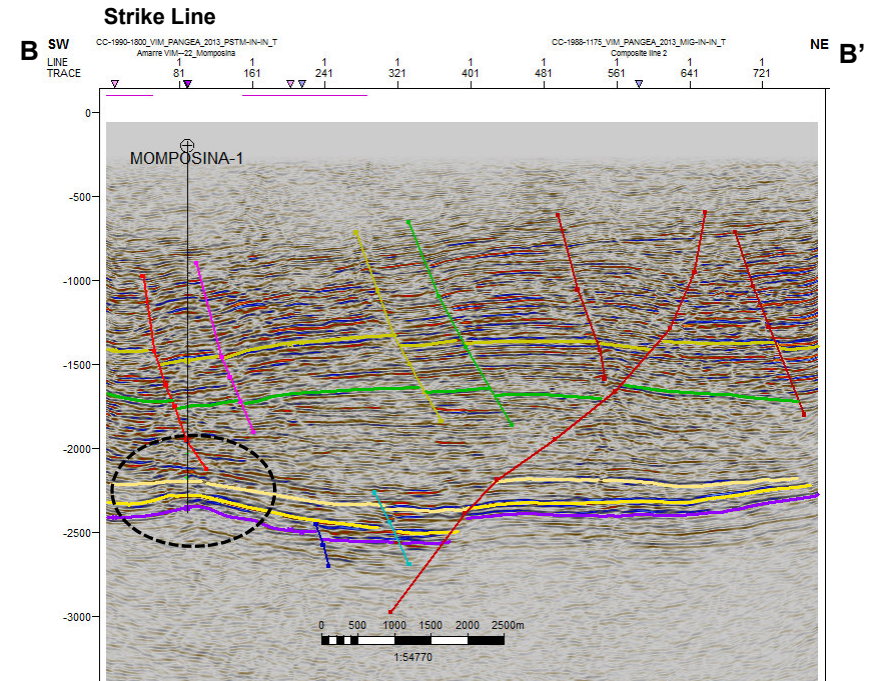
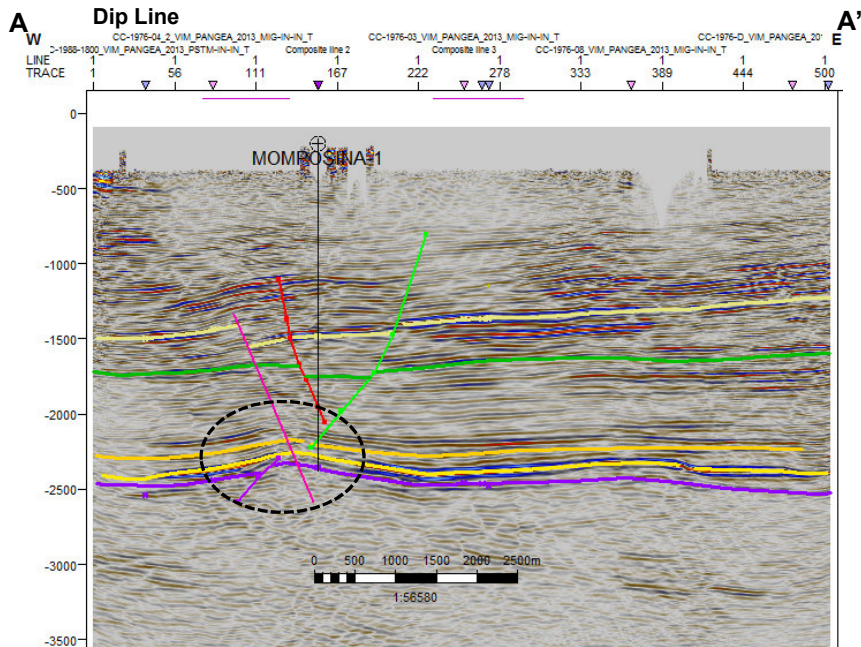
Seismic Interpretation

TWT Map Ciénaga de Oro (Limestone)



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Remaining Reserves

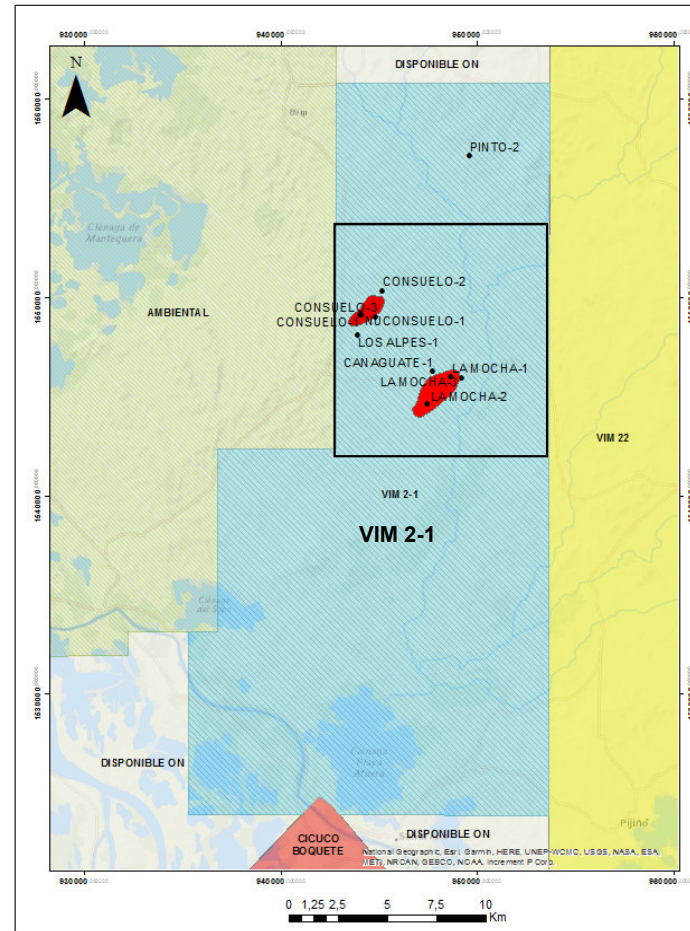
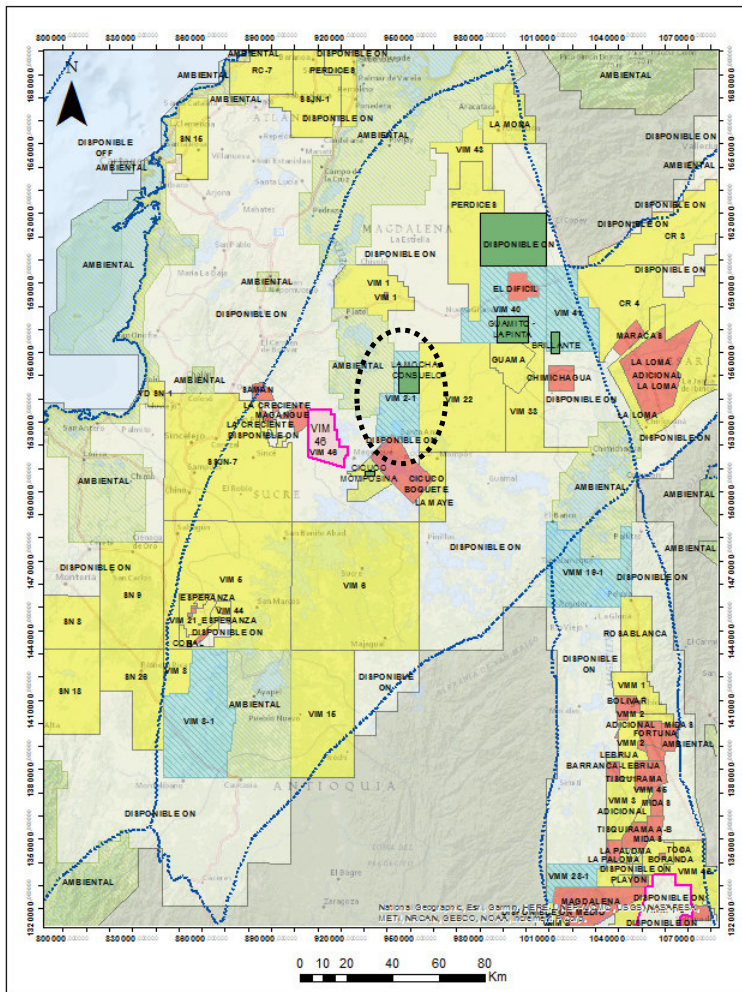
FIELD	OOIP (MMBLS)	OIL CUM. PRODUCTION (MMBLS)	REMAINING RESERVES (MMBLS)
MOMPOSINA	0,5	0,093	0,4

FIELD	OGIP (BCF)	GAS CUM. PRODUCTION (BCF)	REMAINING RESERVES (BCF)
MOMPOSINA	17	2,9	11

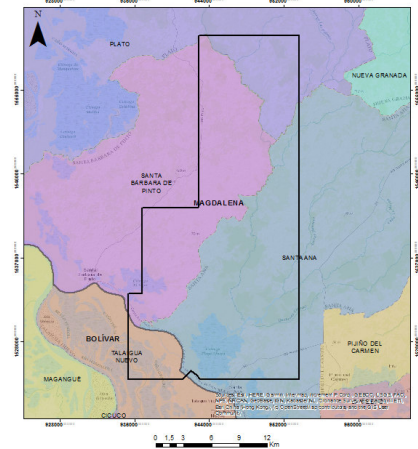
Source: Plan de Explotación, Ecopetrol, 2010

LA MOCHA - CONSUELO AREA

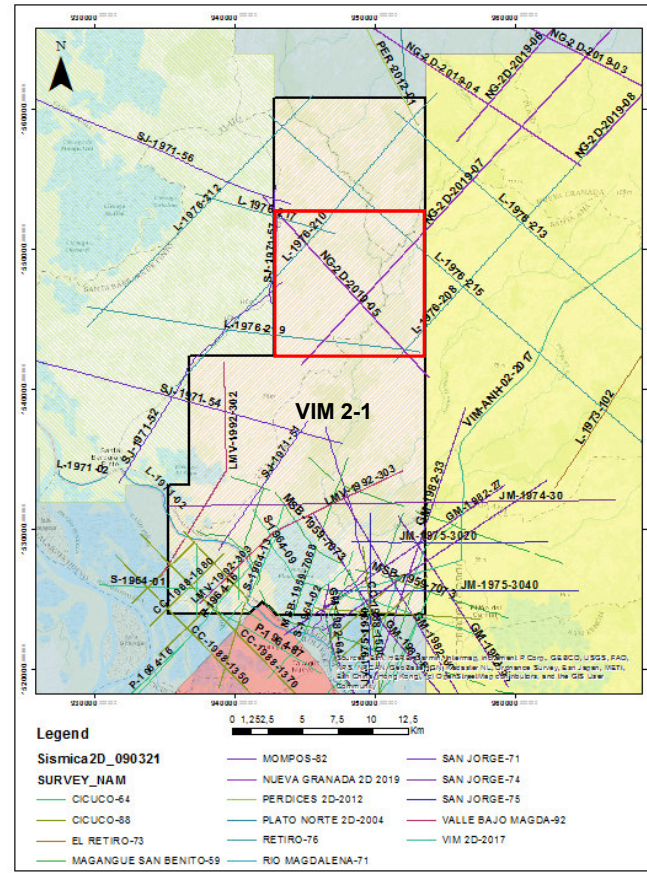
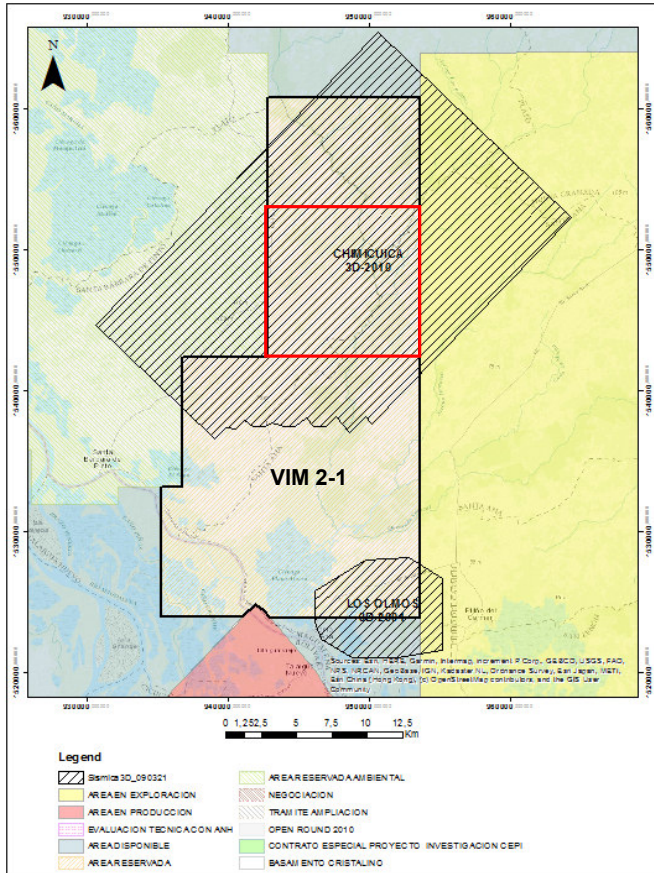
Location



- Area VIM 2-1 Block: 52.243,821 Ha.
- Magdalena and Bolívar Departments
- Plato, Santa Bárbara de Pinto, Santa Ana and Talaigua Nuevo municipalities.



Legend
 ■ SGE, FONDA, COLOMBIA, 2011, 80021 (1)
 ■ CUENCAS AJUSTADAS, 2014 (1)



3D SEISMIC

Chimuica 3D-2010 (512 Km²)

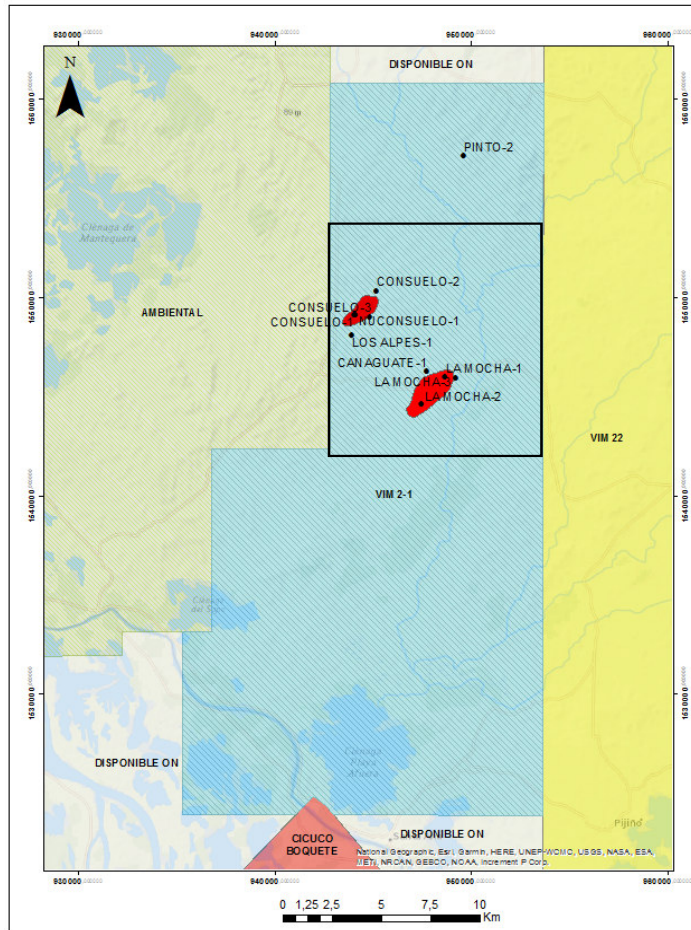
Area in the Block: 268 Km²

2D SEISMIC

- **Nueva Granada 2D-2019 (2 lines)**
- **El Retiro-76 (4 lines)**

DATABASE : Wells

WELLS SUMMARY



AREA	WELL	TD (ft)	YEAR	STATUS	COMPANY
VIM 2-1	CONSUELO-1	4016	1963	PRODUCER - ABANDONED	TEXAS PETROLEUM CO
	LA MOCHA-1	3509	1963	PRODUCER - ABANDONED	TEXAS PETROLEUM CO
	LA MOCHA-2	3150	1963	PRODUCER - ABANDONED	TEXAS PETROLEUM CO
	CONSUELO-2	3990	1964	PRODUCER - ABANDONED	TEXAS PETROLEUM CO
	PINTO-2	4341	1964	PLUGGED AND ABANDONED	TEXAS PETROLEUM CO
	CONSUELO-3	3800	1965	PRODUCER - ABANDONED	TEXAS PETROLEUM CO
	LA MOCHA-3	2904	1965	PLUGGED AND ABANDONED	TEXAS PETROLEUM CO
	LOS ALPES-1	4140	1967	PLUGGED AND ABANDONED	TEXAS PETROLEUM CO
	NUCONSUELO-1	3800	1991	PLUGGED AND ABANDONED	TEXAS PETROLEUM CO
	CAÑAGUATE-1	12000	2012	PLUGGED AND ABANDONED	SK INNOVATION CO LTD

La Mocha - Consuelo Wells

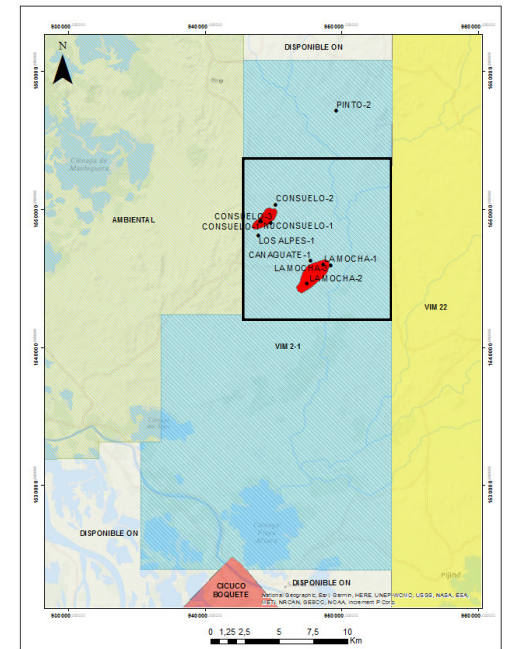
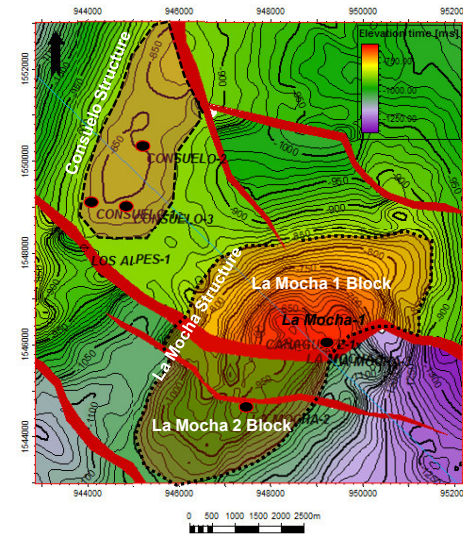
La Mocha Wells - Tubará Fm.

- La Mocha 1 (TD 3509') and La Mocha 2 (TD 3150') both were drilled in 1963 by Texas Petroleum Co.
- Both Wells are considered independent reservoirs, and they were gas producers.
- Production started in May 1969. La Mocha – 1 and 2 had a cumulative production of **632.859 MCFG** until December 1971.
- La Mocha-2 seems to be the best producer with still additional reserves.
- The La Mocha-1 well block is discarded of having additional reserves due to the high BSW.

Consuelo Wells – Tubará Fm.

- Consuelo-1 (TD 4,016'), Consuelo-2 (TD 3,951') and Consuelo-3 (TD 3,486') wells were drilled by Texas Petroleum Co. (1963-1965), and they were gas producers.
- Cummulative production until 1971: **4.5 BCF**
- Consuelo wells were drilled near to gas-water contact, and in 1973 they were completely invaded by water.

TWT Map Tubará Top



La Mocha Wells: Tests & Production

La Mocha-1

- Started: April 21/63
- Ended: July 23/63

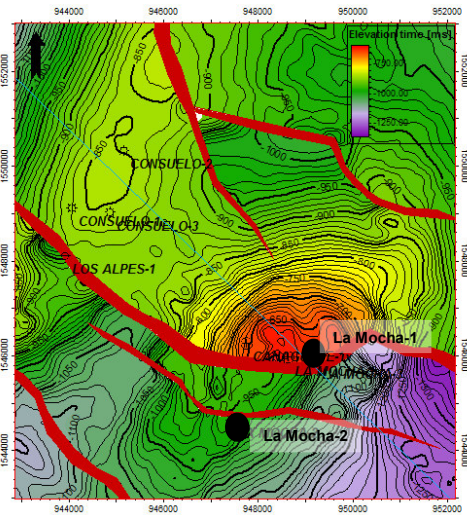
La Mocha-2

- Started: August 30/63



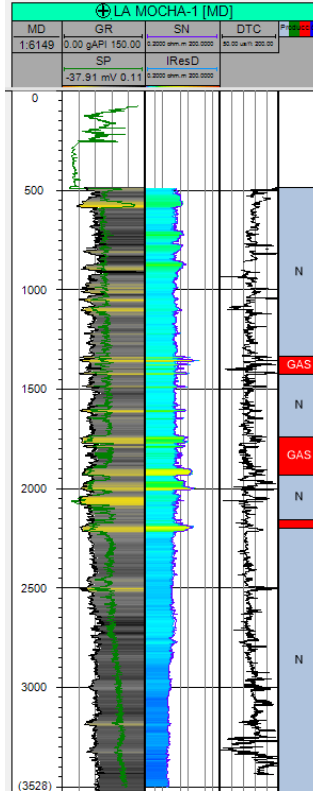
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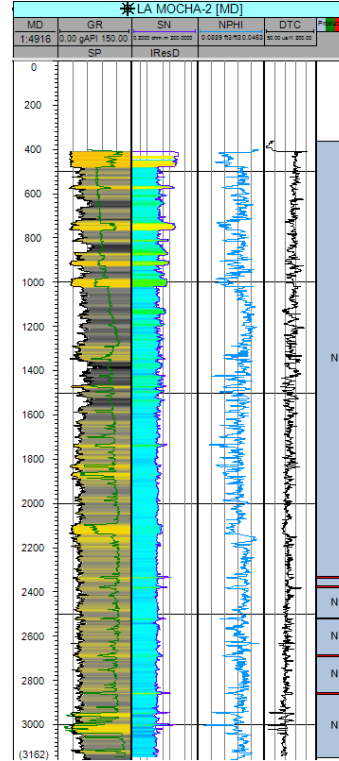
Cumulative Production
May, 1969 –December, 1971:

632,859 MCF



TD: 3509'

Production time: 1 year and 8 months (Started in may, 1969).
Cumulative Production: 195,138 MCF.



TD: 3150'

Production time: 1 year and 8 months (Started in may, 1969).
Cumulative Production: 437,721 MCF.

La Mocha-1: Open Intervals

2157'-2201' (Nov 21/63): Initial production: **1795 MCF/D** without water. 1 day after the tests, the well produced: 5.7 BWP/D of 12.000 ppm CL-. Gas production declined: **1157 MCF/D**, and the water production increased: **52.2 BWP/D**

1740'-1930' (Jan 3-18/64): Initial production: **2347 MCF/D**, fast declination and increment of water: 155 BWP/D.

1337'-1424' (March 4/64): Initial production: **3813 MCF/D without water**. Reservoir pressure to the final test was around 50% of the initial pressure.

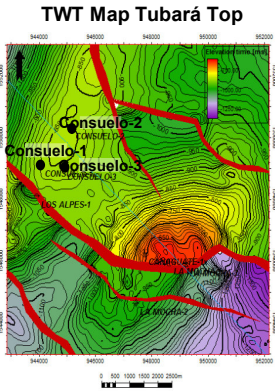
La Mocha-2: Open Intervals: 2,331-2,862ft (without water)

CHOKE (inches)	GAS MCF/D	THP Psig	Head Pressure	Initial (psig) Bottom (2148')
12/64	218	1090	1118	1175
20/64	810	510		
34/64	1280	425		
32/34	1460	275		

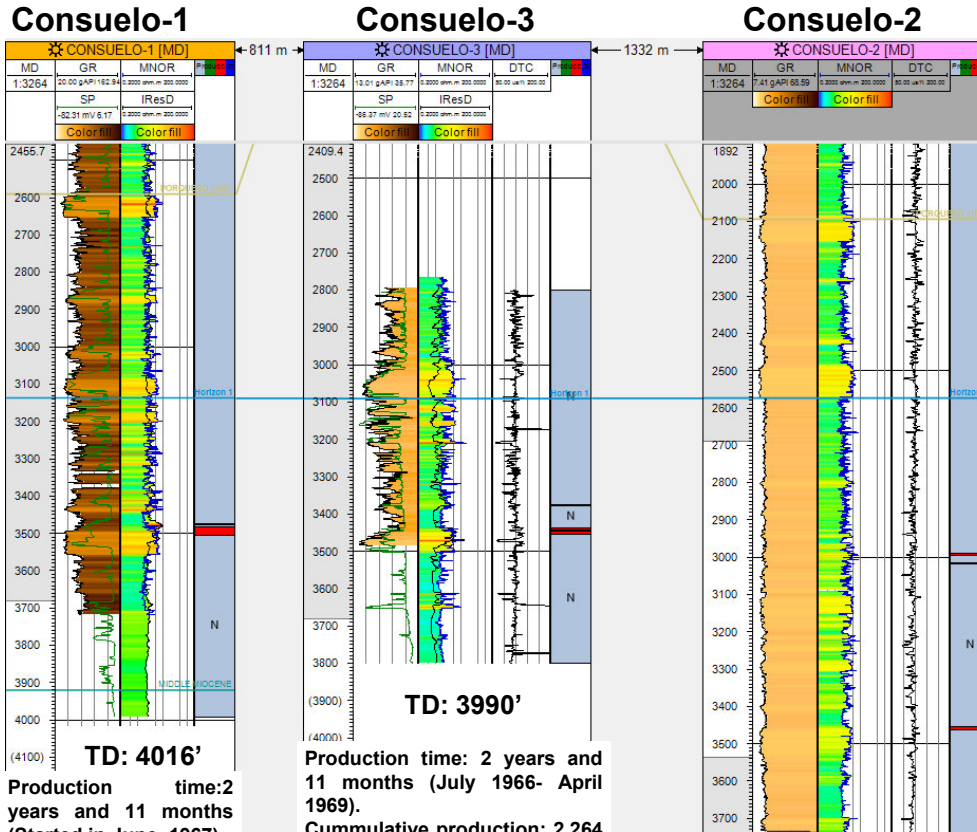
Consuelo Wells: Tests & Production



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Cumulative Production 1966-1971:
4,5 BCF



TD: 4016'
Production time: 2 years and 11 months (Started in June, 1967).
Cumulative Production: 2,075 BCF.

TD: 3990'
Production time: 2 years and 11 months (July 1966- April 1969).
Cumulative production: 2.264 BCF of gas.

TD: 3800'
Production time: 1 year (April 1969 – April 1970)
Cumulative production: 168.390 MCF.

Consuelo-1

Date	Interval	Test time	Choke (inches)	GAS MCF/D	THP Psig
07/14/63	3475'-3477'	4 hrs., 12 min.	12/64	1.055	1.360
	3483'-3504'	6hrs., 20 min.	24/64	3.681	1.260
		5hrs., 8 min.	32/64	6.193	1.180

May 1971 (3273'-3279'): 800 MPC/D, increased water and the well was closed by high water production.

Consuelo-2

Interval	Test Time	Choke (inches)	GAS MCF/D	THP Psig	Water Production (B/d)
2971-2975'	4 hrs	32/64	2760	471	30
3211-3217'	4 hrs	28/64	2540	635	24
3453'-3462'	4 hrs., 25 min.	24/64	2340	720	20

Feb-April/70: Stopped production, May/70: The well was closed.

Consuelo-3

Date	Interval	Test time	Choke (inches)	GAS MCF/D	THP Psig
09/25/65	3374-3454'		24/64	1.435	750
09/26/65	3446-3456'	12 hrs.	24/64	3.708	1.200
10/04/65		8 hrs.	10/64	950	1.340
10/05/65		8 hrs.	16/64	1.852	1.320
10/06/65		8 hrs,	24/64	3.669	1.220
10/08/65	Official Test	24 hrs.	30/64	4.937	1.105

May/1969: 100% water, Consuelo-3 well did not flow again.

LA MOCHA & CONSUELO RESERVES & PRODUCTION FORECAST



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LA MOCHA

- Recoverable Reserves: 2,898 BCFs (Ecopetrol)
- La Mocha 2 block seems to be the best producer with still additional reserves.
- The La Mocha-1 well block is discarded of having additional reserves due to the high BSW.

PRODUCTION FORECAST

La Mocha-2 well presented the following production:

Until April/70 average production: 1.5 MM CFD
From July/70 to December/71: 200,000 CFD not water

Production forecast:

First year: 2 MMCFD
Second year: 1.5 MMCFD
Third year: 1.0 MMCFD

Recoverable reserves after three (3) years will be **1.6 BCFs** equivalent to 56% of the estimated reserves

CONSUELO

- Reserves by Texas Petroleum Co. (Oct 15/69) = 10 BCF (GIP) - 4.5 BCF (Cumulative Production).
- Recoverable Reserves = 5.5 BCFs.
- Estimated recoverable reserves by Ecopetrol (1972) 2.5 BCFs.

PRODUCTION FORECAST

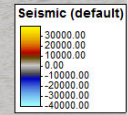
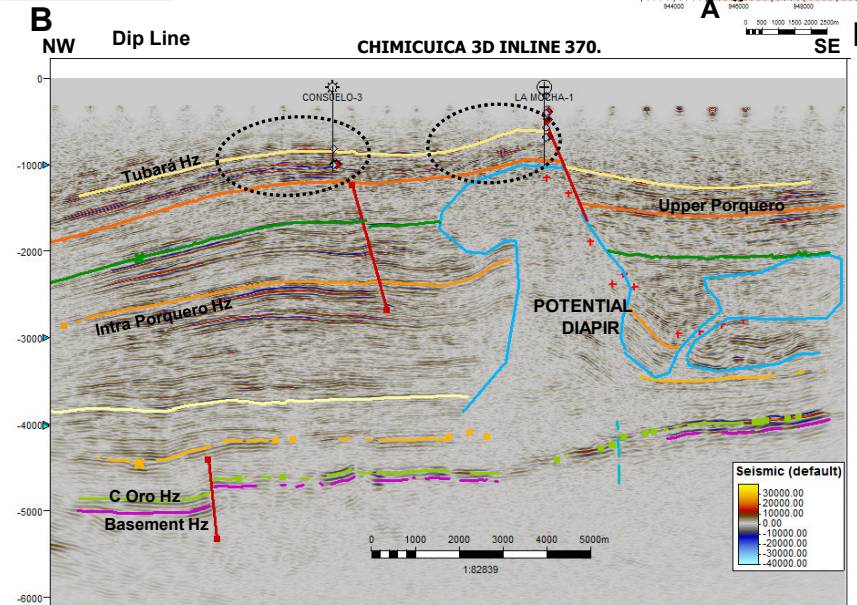
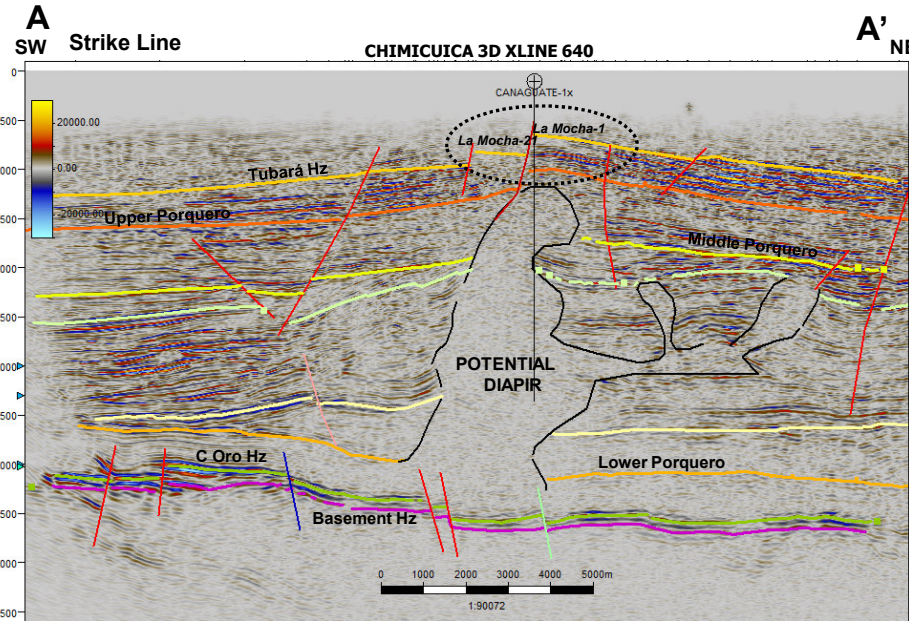
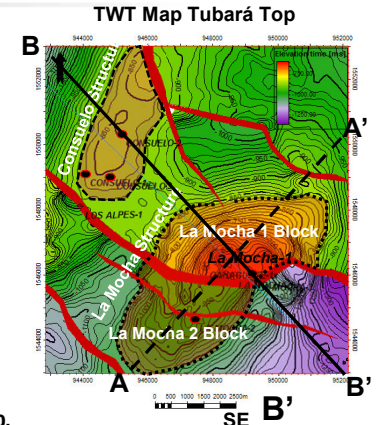
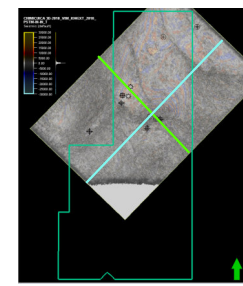
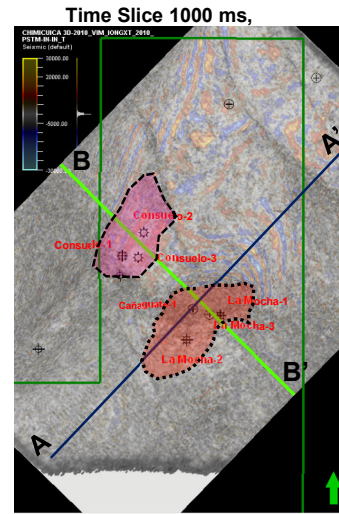
In accordance with the calculated reserves 2.5 BCFs for the remaining producing area in the Consuelo structure, the production in a new well would be: A rate of 2 MMCFD (60 MMCF/Month). It would be possible to reach a total recovery in 40 months. It is an area where the water influx provides the energy of the reservoir.

SEISMIC INTERPRETATION

- Structures
- Faulted Anticline – La Mocha Structure (Tubará Fm.)
- Anticline with four way dip closure – Consuelo structure (Tubará Fm.)



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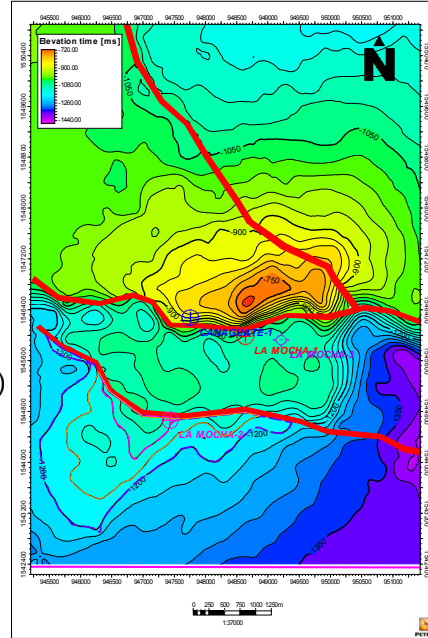
PROSPECTIVITY



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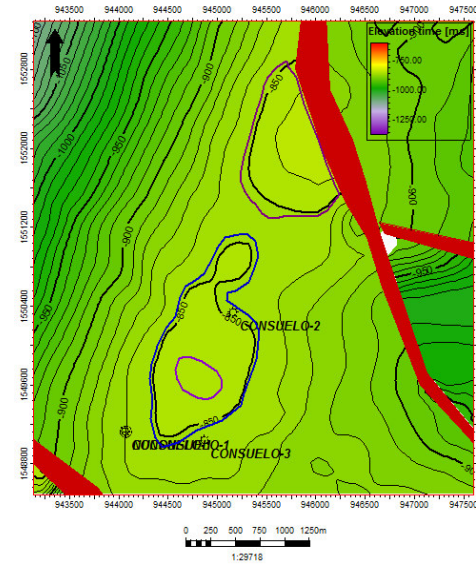
TWT Map Tubará Fm.



AREAS

- High Estimate: (4,0 Km² - 988 Acres)
- Best Estimate: (2,1 Km² - 519 Acres)
- Low Estimate: (0,46 Km² - 113 Acres)

TWT Map Tubará Fm.



PROSPECT OR LEAD	AREA (Acres)	THICKNESS (Ft)	POROSITY (%)	GS (%)	Bg	OGIP (Bcf)	RF (%)	RESOURCES (Bcf)
La Mocha Sur (A) Tubara High Estimated	988	75	0,28	0,75	0,0300	22,59	0,8	18,08

PROSPECT OR LEAD	AREA (Acres)	THICKNESS (Ft)	POROSITY (%)	GS (%)	Bg	OGIP (Bcf)	RF (%)	CONTINGENT RESOURCES (Bcf) RF 80%
CONSUELO NORTH TUBARA - HE	243	40	0,28	0,75	0,0300	2,97	0,80	2,5
CONSUELO UPDIP - TUBARA - HE	374	40	0,28	0,75	0,0300	4,56	0,80	3,7

VOLUMETRICS VIM 2-1:

CONTINGENT AND PROSPECTIVE RESOURCES

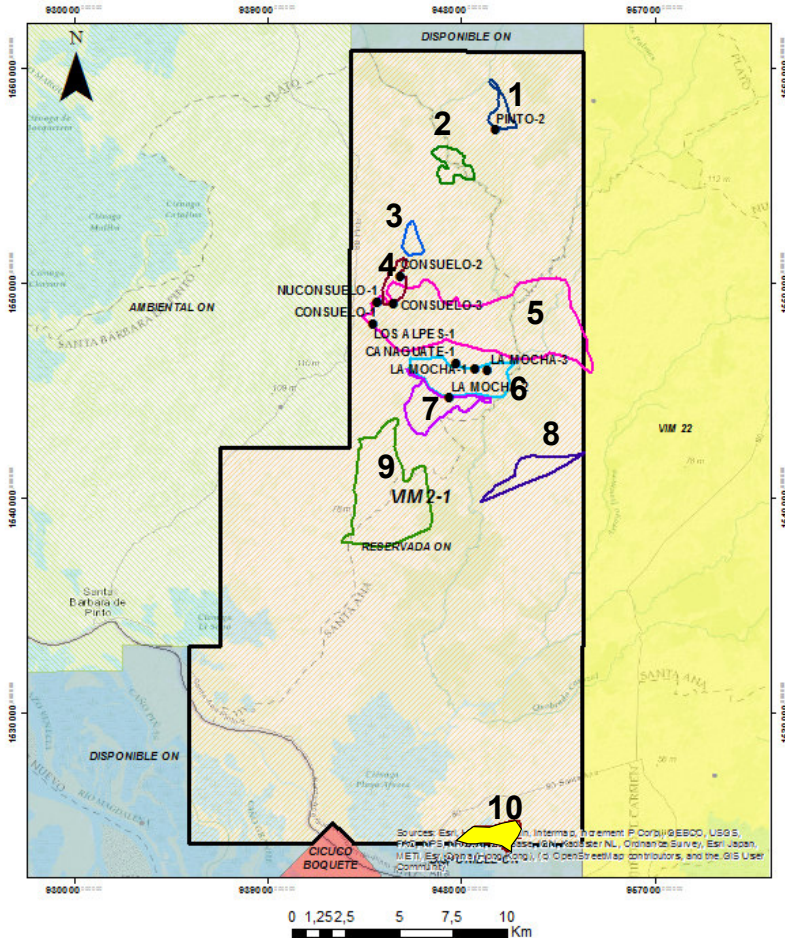
- La Mocha Southern block: Contingent resources (High Estimated) of **18.08 BCF**.
- Consuelo Structure: Contingent resources (High Estimated) of **6,2 BCF**.

Prospective Resources

Lead No	AREA (Acres)	OGIP (Bcf)	Prospective Resources (Bcf)
1	287	3,50	2,8
2	487	5,94	4,7
3	243	2,97	2,4
4	374	4,56	3,7
5	6521	31,96	25,6
6	924	21,13	16,9
7	988	22,59	18,1
8	726	3,96	3,2
9	3637	17,83	14,3
10	552	3,01	2,4

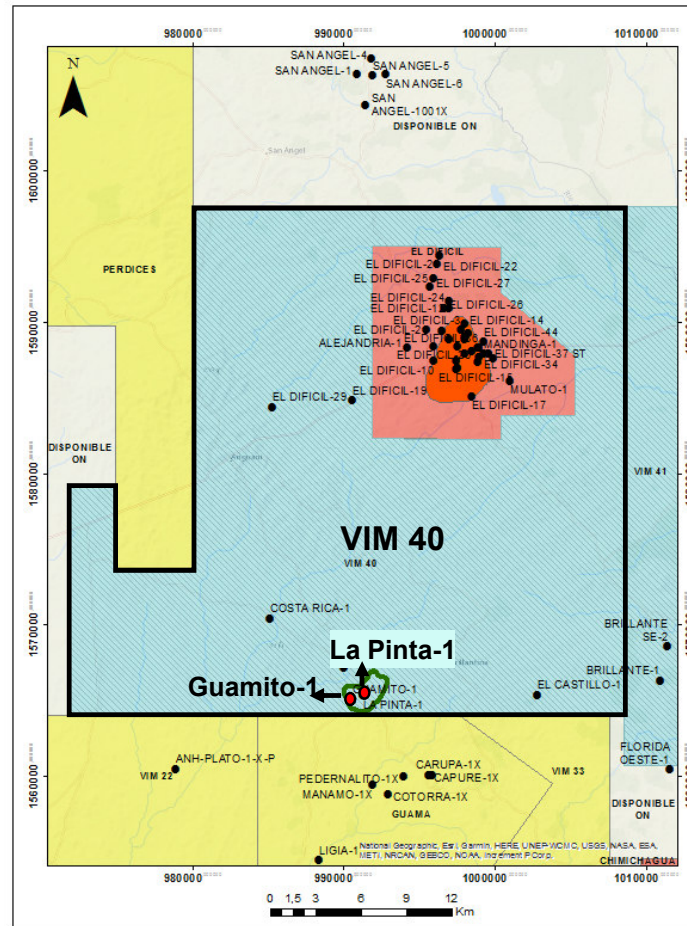
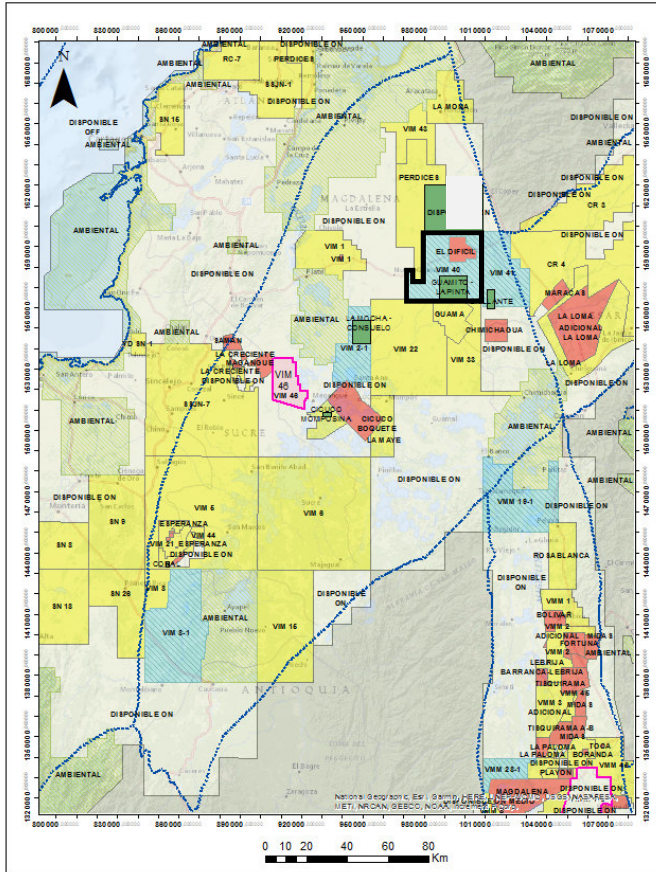
OGIP: 117,4 BCF

PROSPECTIVE RESOURCES: 99 BCF

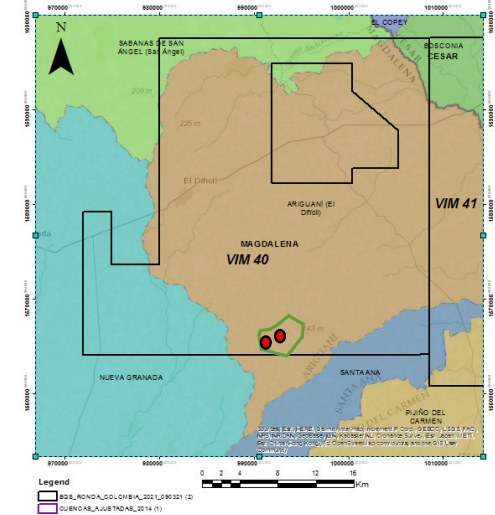


GUAMITO – LA PINTA VIM 40 AREA

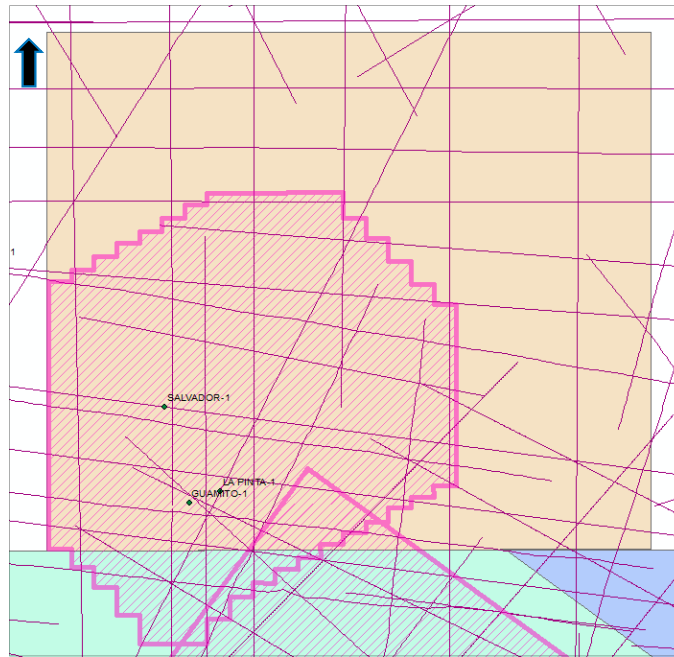
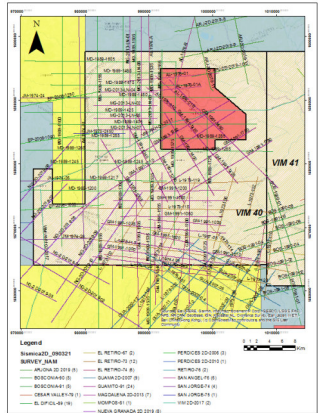
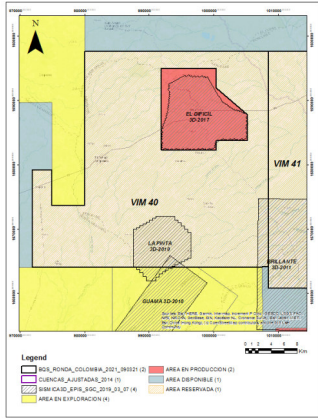
Location



- VIM 40 Block Area: 91,266 Ha.
- Departments: Cesar and Magdalena
- Municipalities: Nueva Granada, Ariguaní, Santa Ana, Sabanas de San Ángel and Bosconia.



Database



Area Guamito-La Pinta
 3D Seismic: La Pinta 3D-2010

3D SEISMIC

- VIM 40**

La Pinta 3D-2010 (67 Km²)

Area in the Block: 58 Km²

2D SEISMIC

- VIM 40 (16 surveys): 1167 Km**

- Acquired from 1967 to 2019 (including seismic of Arjona and Nueva Granada 2D – 2019).

- 2D seismic programs in Guamito – La Pinta area: Guamito-91, El Retiro-74, El Retiro-76

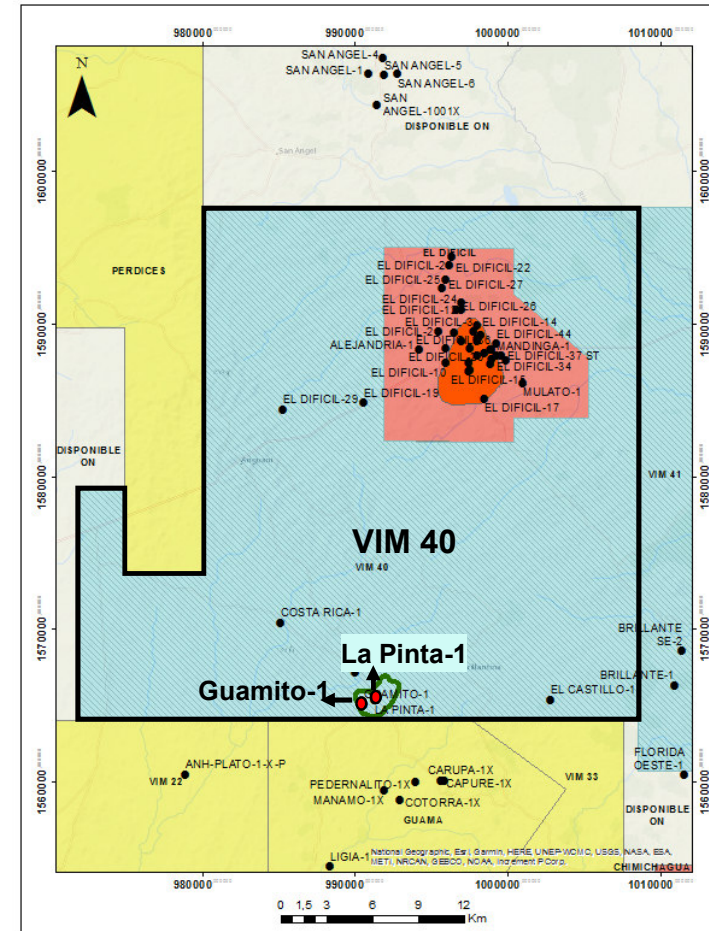
Guamito – La Pinta Wells

Guamito-1 (1975) (TD 12,060')

- Drilled by Chevron. The well produced gas and condensate in the Intra Porquero Unit and Ciénaga de Oro Fm.
- The well test results indicated presence of liquid and gaseous hydrocarbons at the **Intra Porquero level, 120 BOPD 47.7° API, 750 KSCFD and at the top of the Ciénaga de Oro Formation 10,200 feet, 406 BOPD 46.9° API/ 1.8 MMSCFD.**
- The well was closed on June - 1979, and abandoned in 1984.

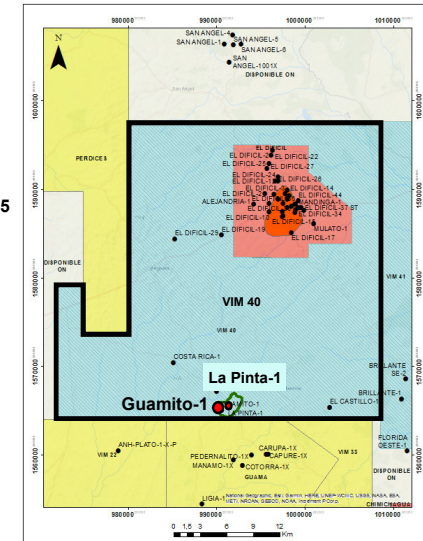
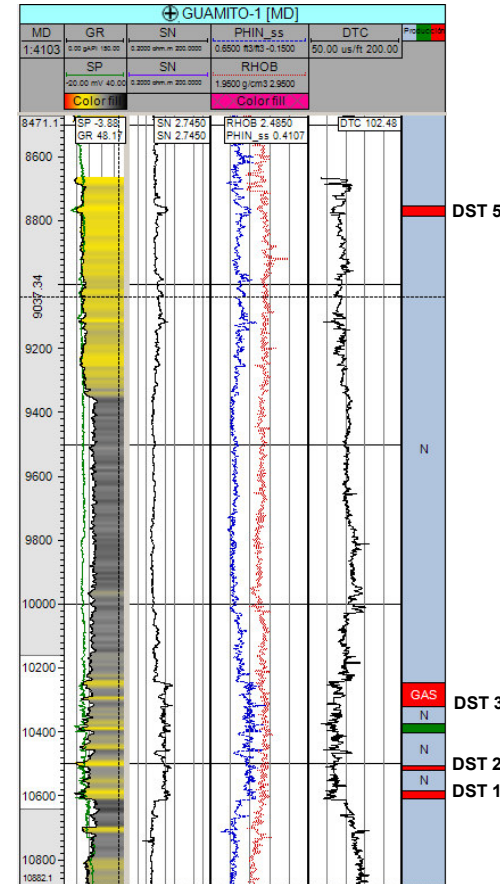
La Pinta-1 (2009) (TD: 11,250')

- Drilled by Petrolífera Petroleum Limited. The well produced from the Middle Porquero and Ciénaga de Oro Formations since Dec-2011 to Jan -2012.
- The well produced in the interval (7804'- 7834') at the Middle Porquero Unit; with a total production of 3.755 Kscf and 942 Bbls of condensate. The last accumulated production reported (Ciénaga de Oro and Porquero Formations) was **3,176 bbls of oil, 524 bbls of water and 12,643 kscf of gas.**
- The La Pinta-1X Well was in a period of short production tests from 6 December 2011 until January 23, 2012, during the 23 days of the first semester an average production of 163.29 MSCF was recorded, 0 MSCF sold and 163.29 MSCF burned. **All the facilities of the field were removed and the itself was left closed** with a pipe tip plug. The definitive abandonment was carried out in 2013.

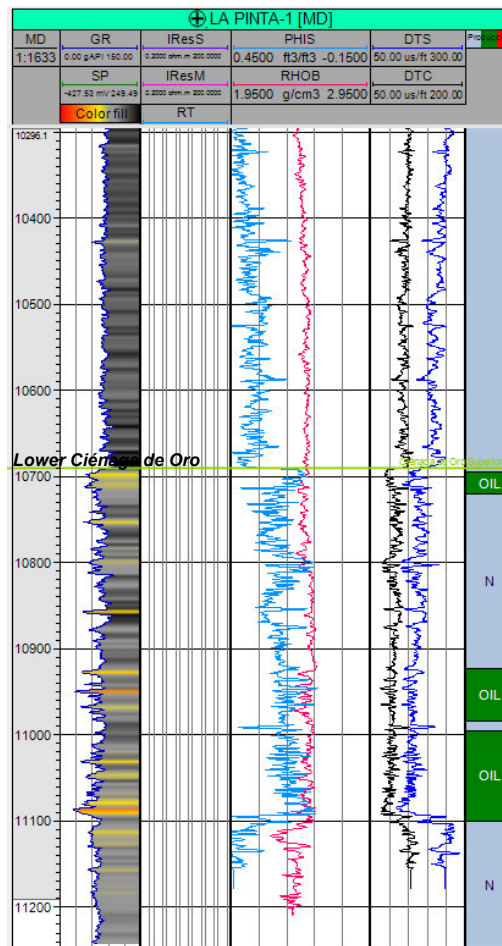
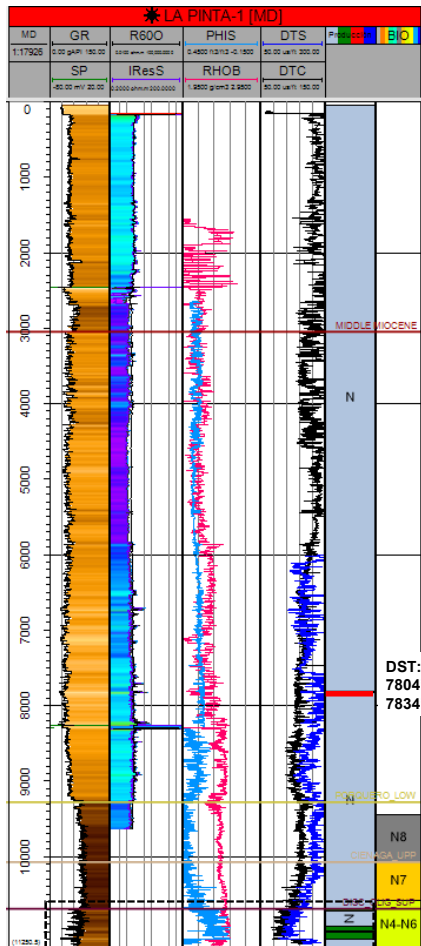


GUAMITO-1 Tests

- DST1: (10584 – 10609') production 624 BWPD with **71 KSCFD**, Water salinity: 8500 ppm, R_w: 0,33 ohm@83°F.
- DST2: (10506-10520') and (10530-10534)': results considered as inconclusive. Production of 400-500 KSCFD through the choke of 28/64".
- DST3: (10246-10321') and (10374-10402') were opened. **A mean production of 1,85 MMSCFD, 406 BOPD of condensate of 46,9° API and 406 BWPD with a salinity of 8700 ppm.**
- DST5: (8754-8785)': 0,75 MMCFD and 280 BOPD (condensate of 47,7° API and 10% of mud).



LA PINTA-1 Tests & Production



DST – Porquero Fm. (7804'-7834')

FLUIDO	VOLUMEN	*API	GE	BSW	CL(ppm)
Crudo	177 Bbl/dia	46,5	0,795	0	2.500
Gas	734 KPCD				
Agua	26 Bbl/dia				

DST – Ciénaga de Oro

DST Nº	BFPD	BOPD	API	BW	Bsw	CI-	pH	Gas KSCF	G.E. gas
1	48.47	3.64	41.7	228.8	92.5%	9030	8	14.89	0.923
2	85.16	24.29	43.7	225.7	71.5%	9600	8	94.62	0.89

- During the extended well test, the well produced in the interval (7804'- 7834') at the Upper Porquero Unit; with a **total production of 3.755 Kscf and 942 Bbls of condensate.**

DST1
10923'-10984'
10995'-11100'

- Until December 31-2012, **the well had an accumulated production of 2,763 bbl of condensate, 10,774 kscf of gas and 3,776 bbl of water.**

La Pinta-1



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OPERADOR : PETROLIFERA PETROLEUM (COLOMBIA) LTD CONTRATO : E&P SIERRA NEVADA CAMPO: LA PINTA ESTRUCTURA: ANTICLINAL FALLADO BLOQUE: E&P SIERRA NEVADA
 PORQUERO MIEMBRO : YACIMIENTO: PORQUERO SUPERIOR MES: Febrero AÑO: 2012
 MODALIDAD DE EXPLOTACION
 PRUEBAS INICIALES : PRUEBAS EXTENSAS : XXXXXX SOLO RIESGO : COMERCIAL :

POZO	MUNICIPIO CODIGO DANE	METODO DE PRODUCCION	DIAS		PETROLEO			FACTOR DE CORRECCION	AGUA			GAS (KPC)			BSW (%)	API @ 60° GRAV.	RGA	ESTADO DE LOS POZOS A FIN DE MES
			EN EL MES	ACUM.	DIARIA (BLS)	MENS. (BLS)	ACUMULADO (BLS)		DIARIA (BLS)	MENS. (BLS)	ACUMULADO (BLS)	DIARIA	MENS.	ACUMULADO				
LA PINTA 1	47058	Flujo Natural	0,0	53,5	0,00	0	3.176	0,9988	0	0	524	0,0	0,0	12.643	0,00%	0,0	0,000	CERRADO
TOTAL				53,5		0	3.176			0	524		0,0	12.643				

Last production reported Jun 2012-End LTT

- Oil 42 bopd
- Water 0 bwpd
- Gas 163 Mscfd
- LTT 53.5 days

Accumulated production Dec 2011- February 2012

- Oil 3,176 bbls (60 bopd)
- Water 524 bbls (8 bwpd)
- Gas 12,643 Mscf (236 Mscfd)

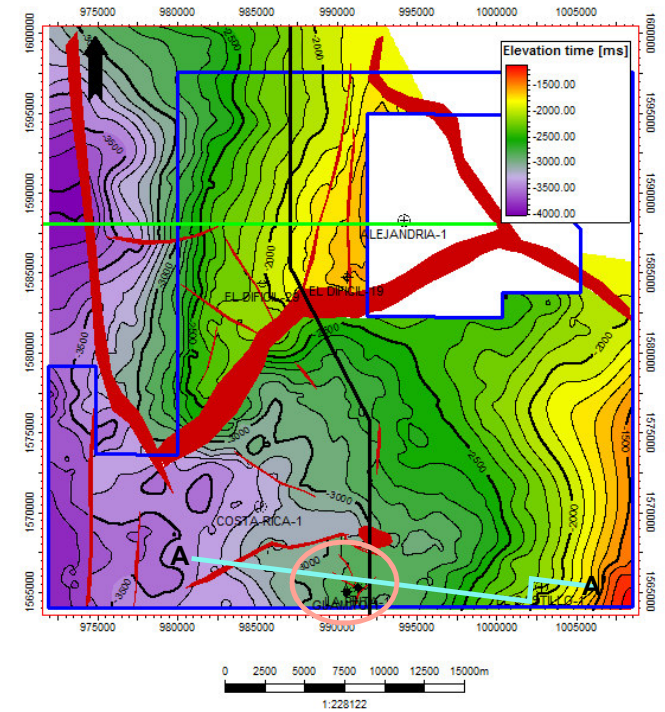
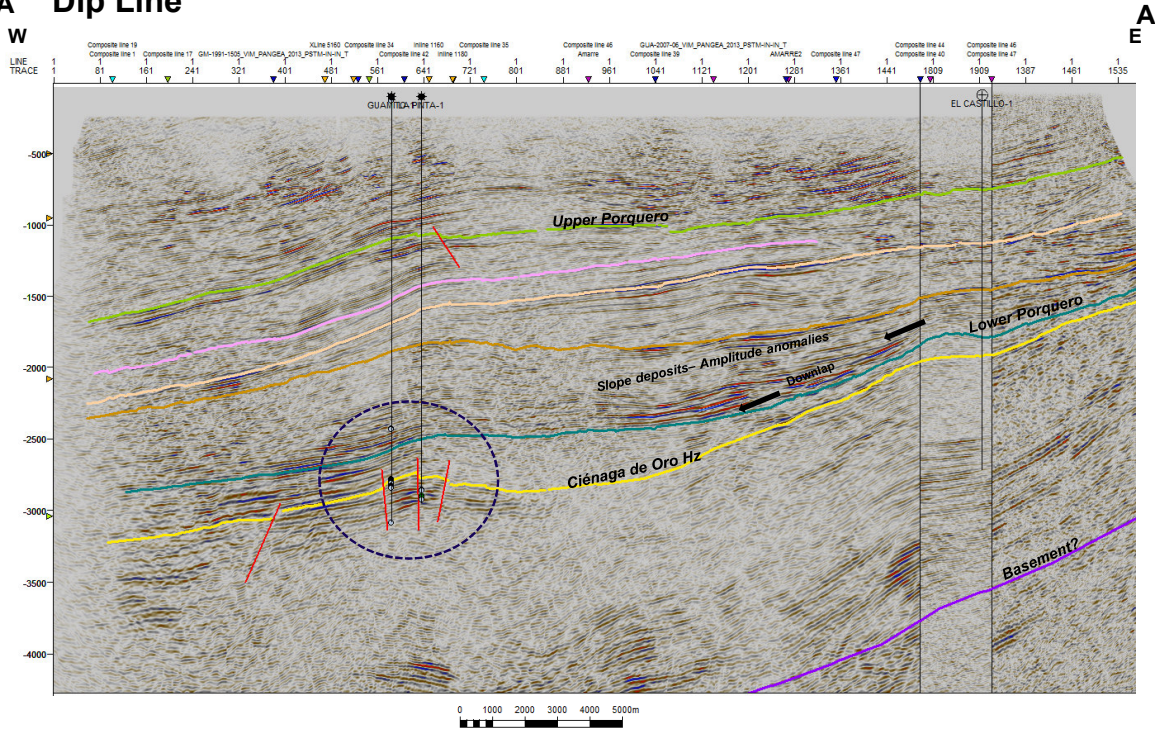
The well completed the extensive production testing on January 23, 2012

Source: Monthly Prediction Report- Ministerio de Minas y Energía, 2012

SEISMIC INTERPRETATION

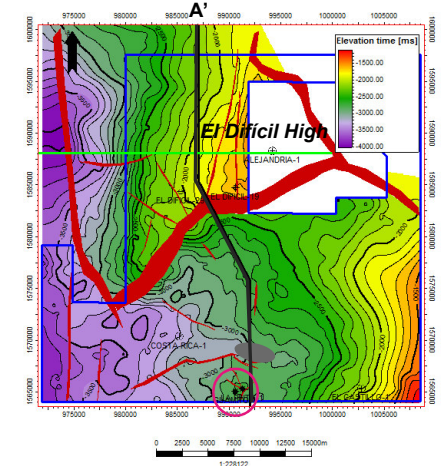
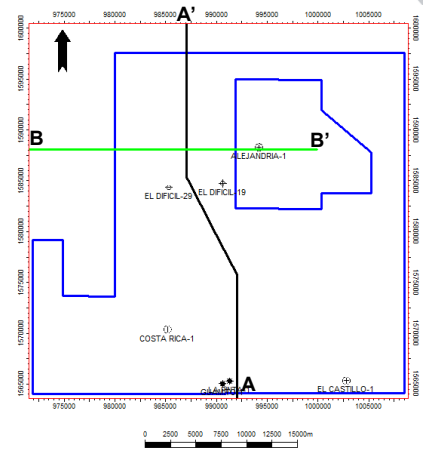
- PLAYS
- Structural: Faulted Anticline (Ciénaga de Oro. Fm.)
- Stratigraphic: Amplitude Anomalies with downlap patterns (slope deposits - IntraPorquero levels).

A Dip Line

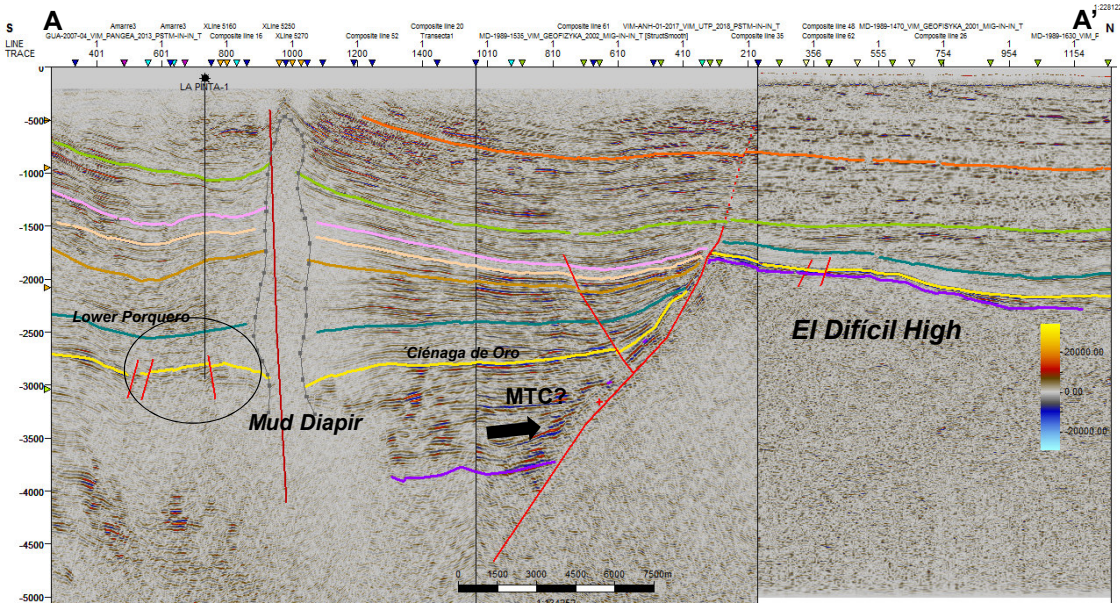


SEISMIC INTERPRETATION VIM 40:

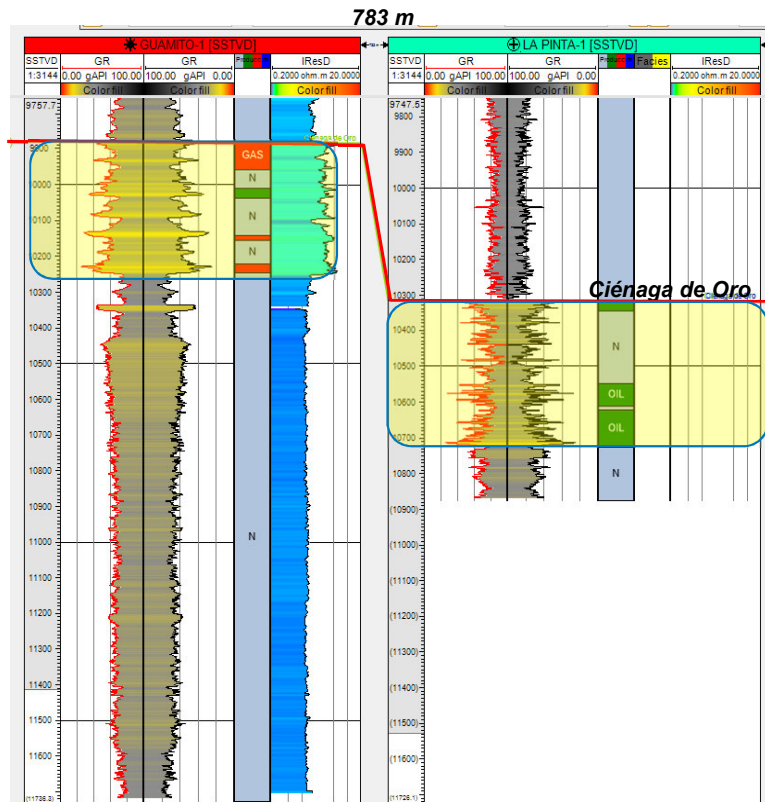
- PLAYS
- Folding related to diapirism dynamics



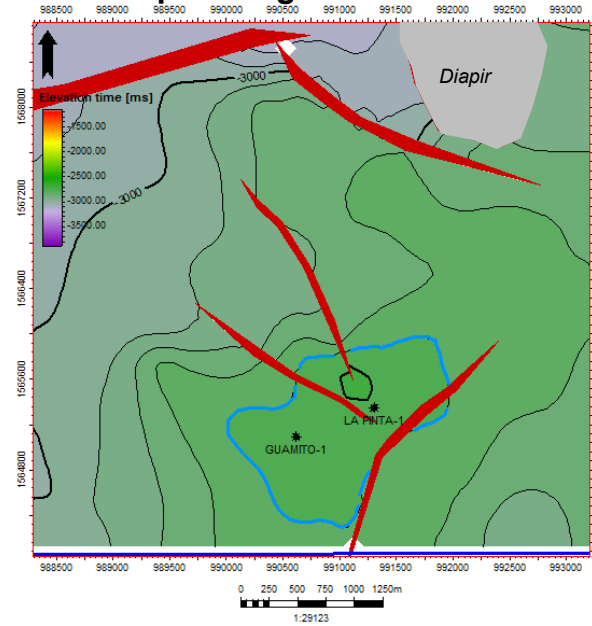
Strike Line



CIENAGA DE ORO - Volumetrics



TWT Map Ciénaga de Oro Fm.



AREAS

- High Estimate: 945 Acres
- Best Estimate: 462 Acres

PROSPECT	AREA (Acres)	THICKNESS (Ft)	POROSITY (%)	SG (%)	Bg	OGIP (Bcf)	RF (%)	RESOURCES (Bcf)
Guamito La Pinta CDO Best Estimate	462	25	0,20	0,85	0,0097	8,82	0,85	7,49

VOLUMETRICS VIM-40:



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CONTINGENT AND PROSPECTIVE RESOURCES

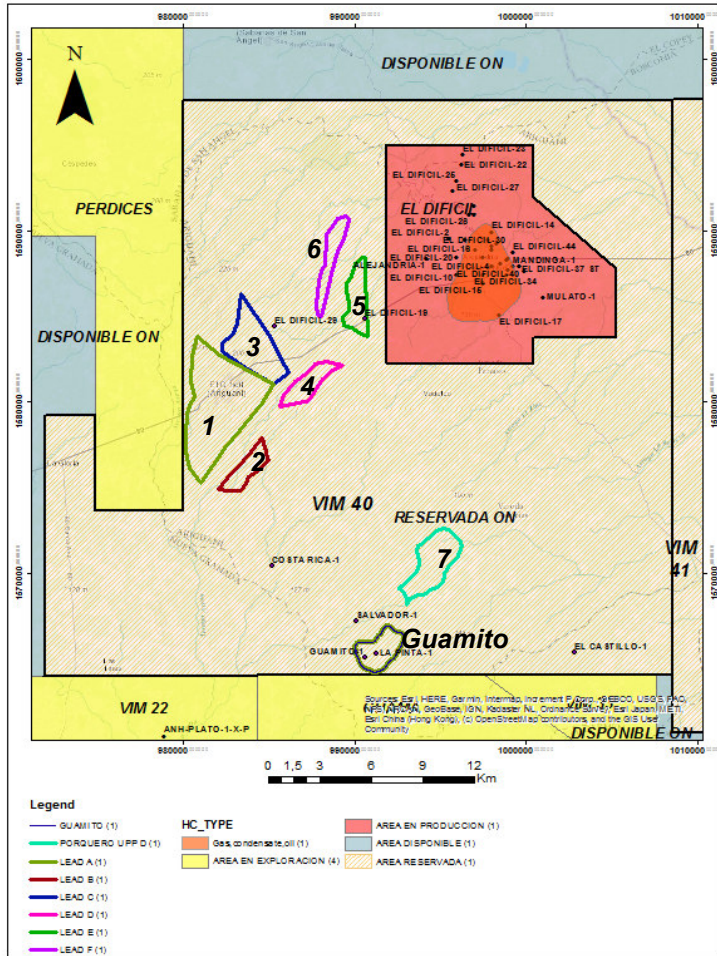
Discovered Reservoir	High Estimated Area (Acres)	OGIP (Bcf)	Contigent Resources (Bcf)
Guamito-La Pinta	945	28,65	24,35

Prospective Resources

LEAD NO	AREA (Acres)	OGIP (Bcf)	Prospective Resources (Bcf)
1	5588	60,98	15,25
2	804	23,50	18,80
3	2251	24,56	6,14
4	877	25,63	20,51
5	1053	11,49	9,19
6	945	10,32	2,58
7	1817	80,02	64,01

OGIP: 236,5 BCF

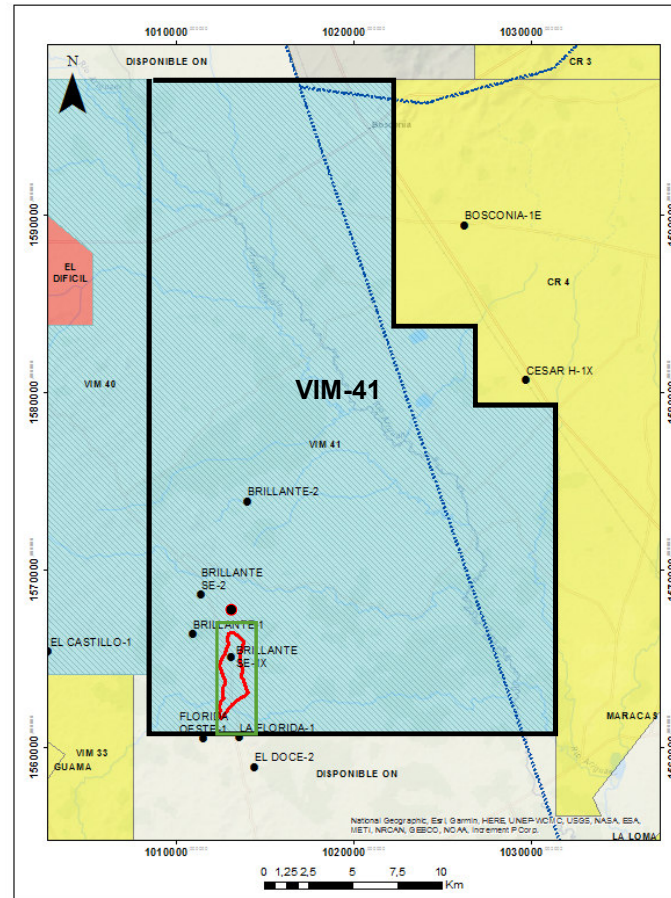
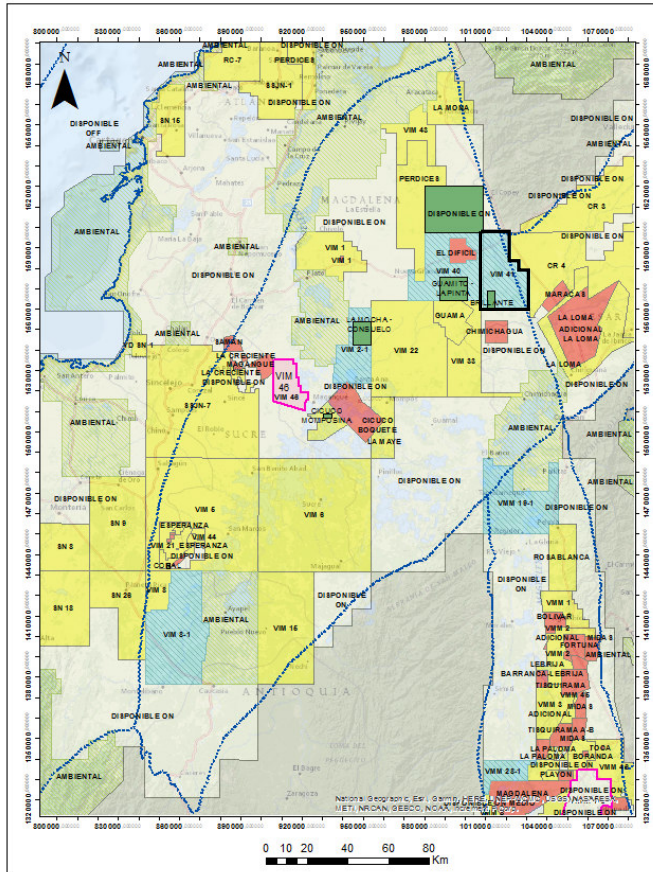
PROSPECTIVE RESOURCES: 136,48 BCF



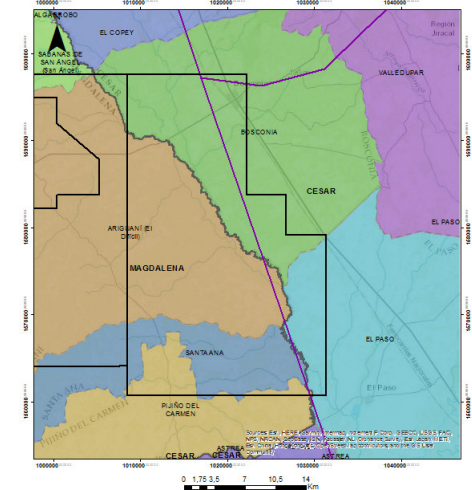
BRILLANTE AREA

Location

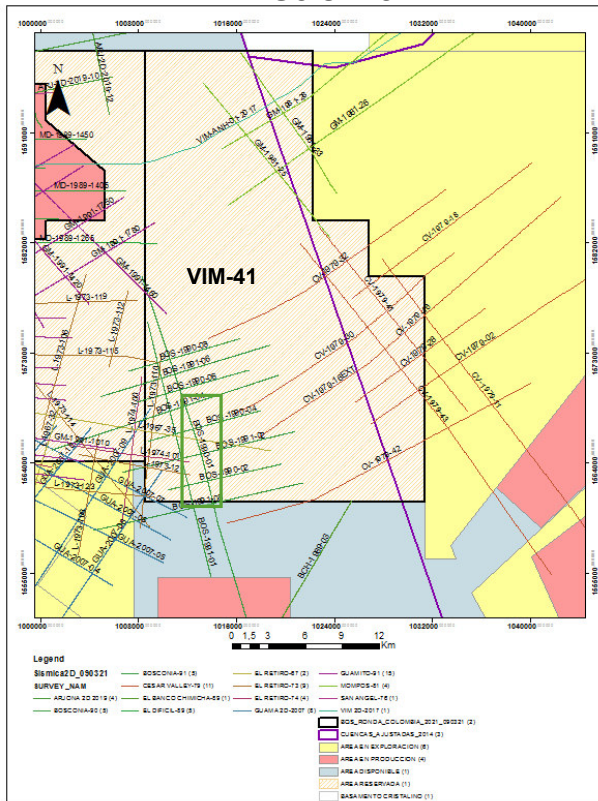
VIM 41



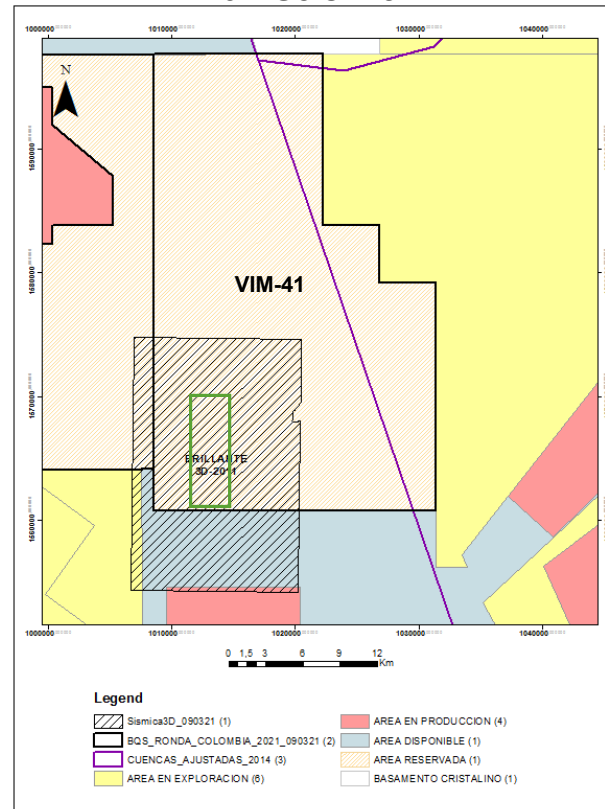
- **Area:** 91,266 Ha
- **Departments:** Magdalena and Cesar.
- **Municipalities:** Ariguani, Santa Ana, Ariguani, Pijiño del Carmen, Bosconia, El Paso.



2D Seismic



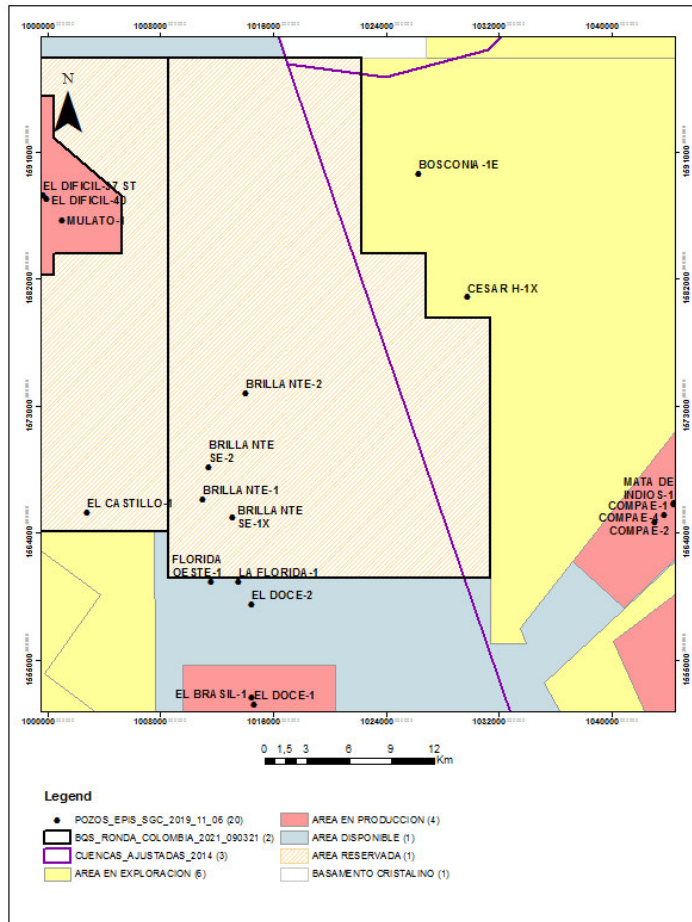
3D Seismic



SEISMIC

- 2D seismic surveys:
 - El Retiro-67
 - El Banco Chimichagua-89
 - Bosconia-90
 - Bosconia-91
 - Cesar Valley-79
 - Guama 2D-2007
 - VIM 2D-2017

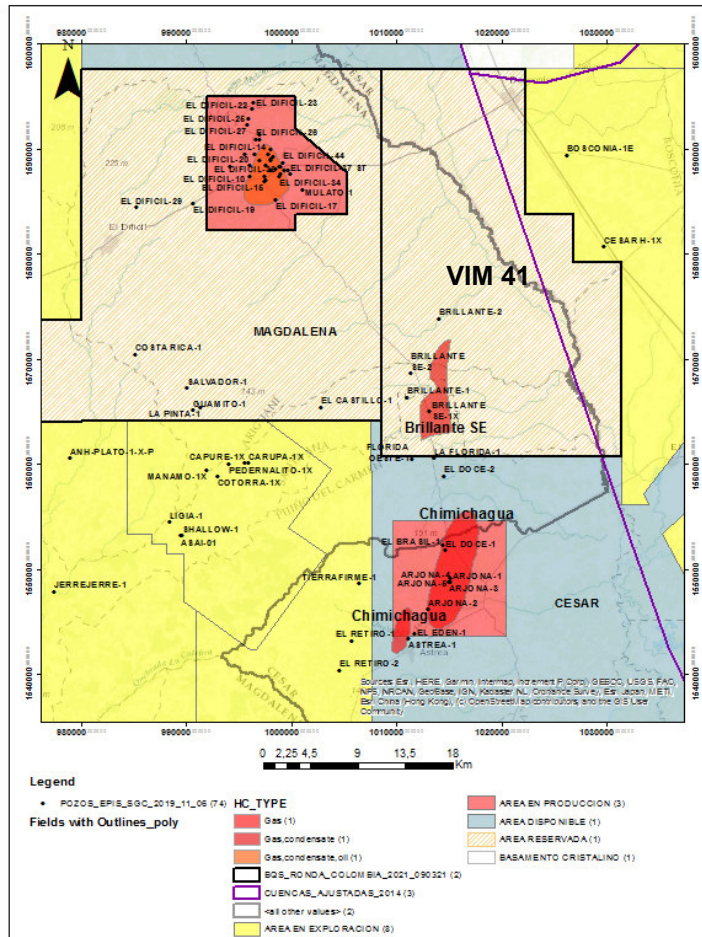
- 3D seismic survey:
 - Brillante-3D-2011 (274,96 Km²)



WELL SUMMARY

AREA	WELL	TD (ft)	YEAR	STATUS	COMPANY
VIM 41	BRILLANTE-1	10260	1944	ABANDONED	SHELL E&P COLOMBIA
	BRILLANTE-2	4918	1945	PLUGGED AND ABANDONED	SHELL E&P COLOMBIA
	BRILLANTE SE-1X	9500	2010	PRODUCER - ABANDONED	PETROLIFERA PETROLEUM COLOMBIA LTD
	BRILLANTE SE-2	5520	2011	PLUGGED AND ABANDONED	PETROLIFERA PETROLEUM COLOMBIA LTD

Near Fields



NEAR FIELDS

FIELD	CONTRACT	RESERVOIR UNIT	PRODUCTION	DISCOVERY YEAR
EL DIFÍCIL	EL DIFÍCIL	CIÉNAGA DE ORO - LIMESTONE	11,5 MMBO, 344 BCF	1943
CICUCO	CICUCO	CIÉNAGA DE ORO	51 MMSTBO & 196 BCF	1956
VIOLO	CICUCO	CIÉNAGA DE ORO	2,6 BCF	1958
ZENON	CICUCO	CIÉNAGA DE ORO		1959
BOQUETE	CICUCO	CIÉNAGA DE ORO	18,5 MMSTBO & 41 BCF	1961
ARJONA	CHIMICHAGUA	CIÉNAGA DE ORO		1991
LA MOCHA	ANH	TUBARÁ	632,8 MMscf	1963
LOS ALPES-CONSUELO	ANH	TUBARÁ	4,5 BCF	1963
GUAMITO - LA PINTA	ANH	CIÉNAGA DE ORO, INTRAPORQUERO	13,5 MMscf & 4 MBO	1975
MOMPOSINA	CICUCO MOMPOSINA	CIÉNAGA DE ORO	2,9 BCF	1990
BRILLANTE SE	ANH	CIÉNAGA DE ORO	2,687 MBO & 578 MMscf	2010
CAPURE	GUAMA	INTRA PORQUERO		2013
COTORRA	GUAMA	MIDDLE PORQUERO	149 MMscf	2012
PEDERNALITO	GUAMA	INTRA PORQUERO		2010
LA BELLEZA	VIM-1	CIÉNAGA DE ORO	Tested 2,696 BOPD & 11.8 MMcf/d of gas (4,663 boe/d combined). 43 API crude.	2019

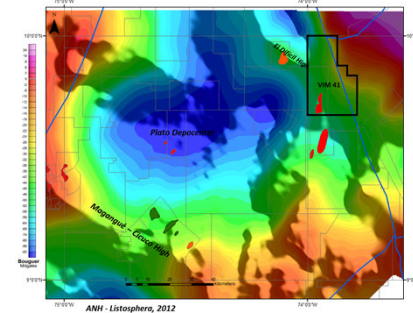
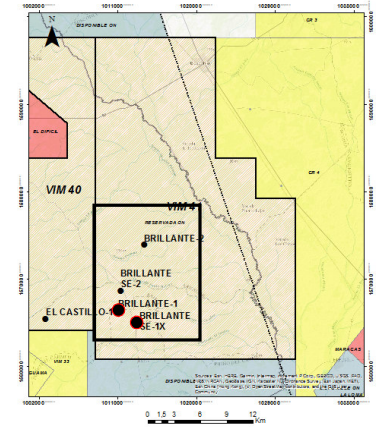
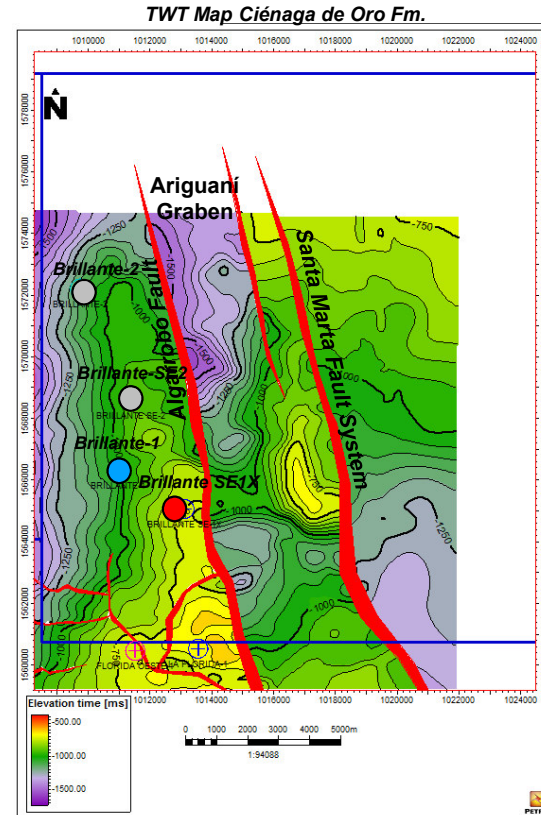
Brillante Wells

Brillante-1 (1944) TD (10,259')

- Drilled by Shell. The reservoir was the sands from Ciénaga de Oro Formation, in the Brillante structure.
- Strong gas and oil shows in different intervals. In 10,256': While the well was drilling up to T.D., it showed gas and oil in mud. Recovered 40 gallons of 33,8° API.
- After 3 ½ months of tests, the well was abandoned.

Brillante SE-1X (2010) TD (9500')

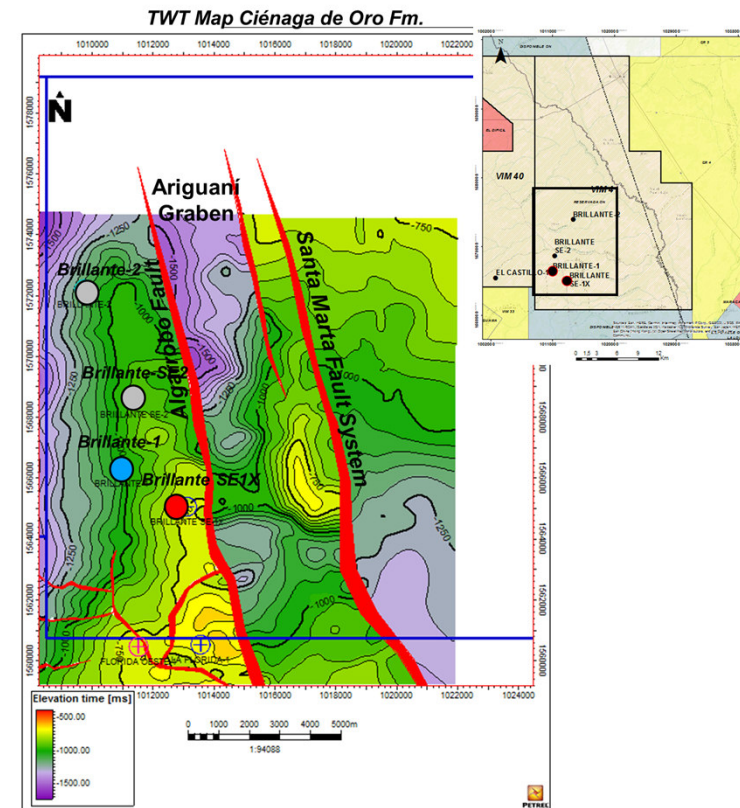
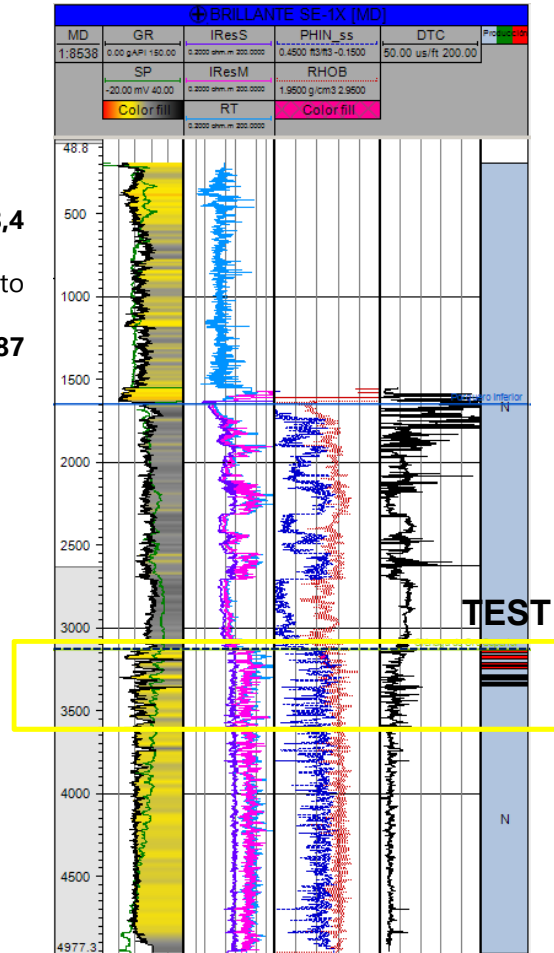
- Drilled by Petrolífera Petroleum Ltd. Reservoir: Sands from Upper Ciénaga de Oro Formation: thickness: 225', porosity: 13%, SW: 38%. Net Pay: 105,5'.
- Cumulative production was of **578 MMSCF of gas, 2,687 Bls of oil and 44 Bls of water**.
- The low capacity on the transportation solution ("virtual gas pipeline") caused that the well and the field finally closed on June - 2014.



The Brillante structure is a three way dip closure against normal faults, associated with the transcurrent Santa Marta Fault system, just west of the Ariguani Graben.

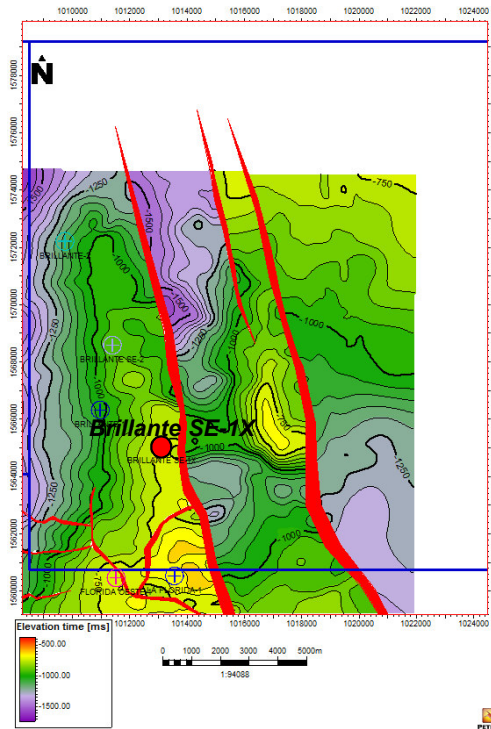
Well Brillante SE-1X

- Company: Petrolífera Petroleum Limited
- Initiated: Feb 2, 2010
- Completed: April 30, 2010
- TD: 9500', RTE: 251', GLE: 229'
- Test Interval: 212' (3138,5' – 3350')
- 105,5' Net Pay
- Initial test was obtained a natural gas flow: 2,6 - 8,4 MMSCFD (Choke 48/64", head pressure: 579 psi).**
- This section is composed of quartzose sandstones of fine to medium grain.
- Cumulative production was of 578 MMSCF of gas, 2,687 Bls of oil and 44 Bls of water.**

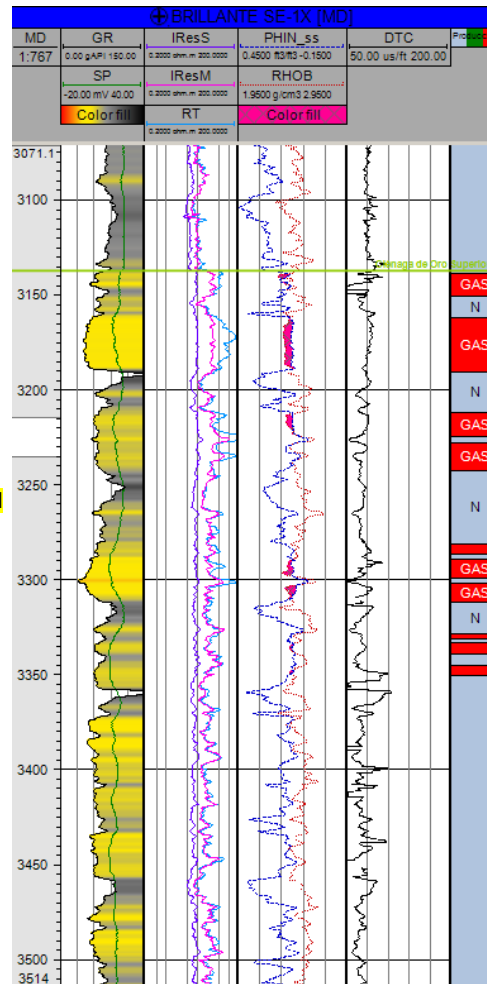


The Brillante structure is a three way dip closure against normal faults, associated with the transcurent Santa Marta Fault system, just west of the Ariguani Graben.

Well Brillante SE-1X: DST



GAS PRODUCTION



Perforated intervals during the initial DST in the Brillante SE-1X well

INTERVALS (feet)	
3138	3150
3162	3190
3212	3225
3228	3242
3281	3287
3289	3299
3302	3312
3328	3331
3333	3339
3345	3350

Choke size Inches	Pressure Psia	Rate MMSCF/D
28/64	1044	2609
32/64	997	3489
36/64	825	5311
40/64	735	7234
48/64	585	8365

Well Brillante SE-1X



El futuro es de todos

Minenergía

OPERADOR : PETROLIFERA PETROLEUM (COLOMBIA) LIMITED CONTRATO : E&P SIERRA NEVADA CAMPO: BRILLANTE ESTRUCTURA: ANTICLINAL BLOQUE: SIERRA NEVADA
 FORMACION: CIENAGA DE ORO MIEMBRO : YACIMIENTO: MES: JUNIO AÑO: 2014
 MODALIDAD DE EXPLOTACION PRUEBAS EXTENSAS : XXXXX SOLO RIESGO : COMERCIAL :

POZO	MUNICIPIO CODIGO DANE	METODO DE PRODUCCION	DIAS		PETROLEO			FACTOR DE CORRECCION	AGUA			GAS (KPC)			BSW (%)	API @ 60° GRAV.	RGA	ESTADO DE LOS POZOS A FIN DE MES
			EN EL MES	ACUM.	DIARIA (BLS)	MENS. (BLS)	ACUMULADO (BLS)		DIARIA (BLS)	MENS. (BLS)	ACUMULADO (BLS)	DIARIA	MENS.	ACUMULADO				
Brillante SE-1	47545	FN	11,85	533,58	8,50	77	2.687	1	0,00	0,00	44	1.204,25	14.270	578.307	0,00%	59,6	0	Producción
TOTAL				533,58		77	2.687			0,0	44		14.270	578.307				

Last production reported Jun 2014-End LTT

Accumulated production

- Oil 8.5 bopd
- Water 0 bwpd
- Gas 1,204 Mscfd
- LTT 533,5 days

- Oil 2,687 bbls (5 bopd)
- Water 44 bbls (0.08 bwpd)
- Gas 578,307 Mscf (1,085 Mscfd)

*Estimated GOIP - > 86-163 BCF @ Oct 2009

Total Reserves and Remained Audited (Petrolífera, 2014)

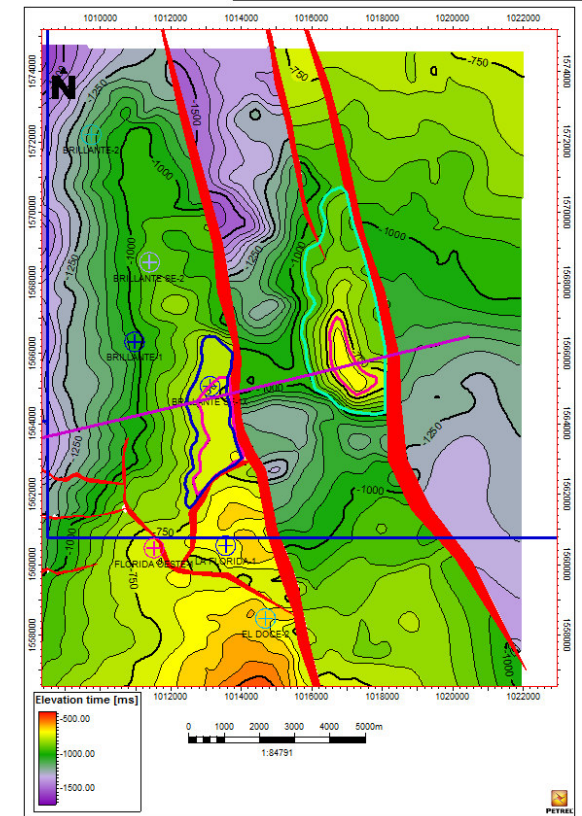
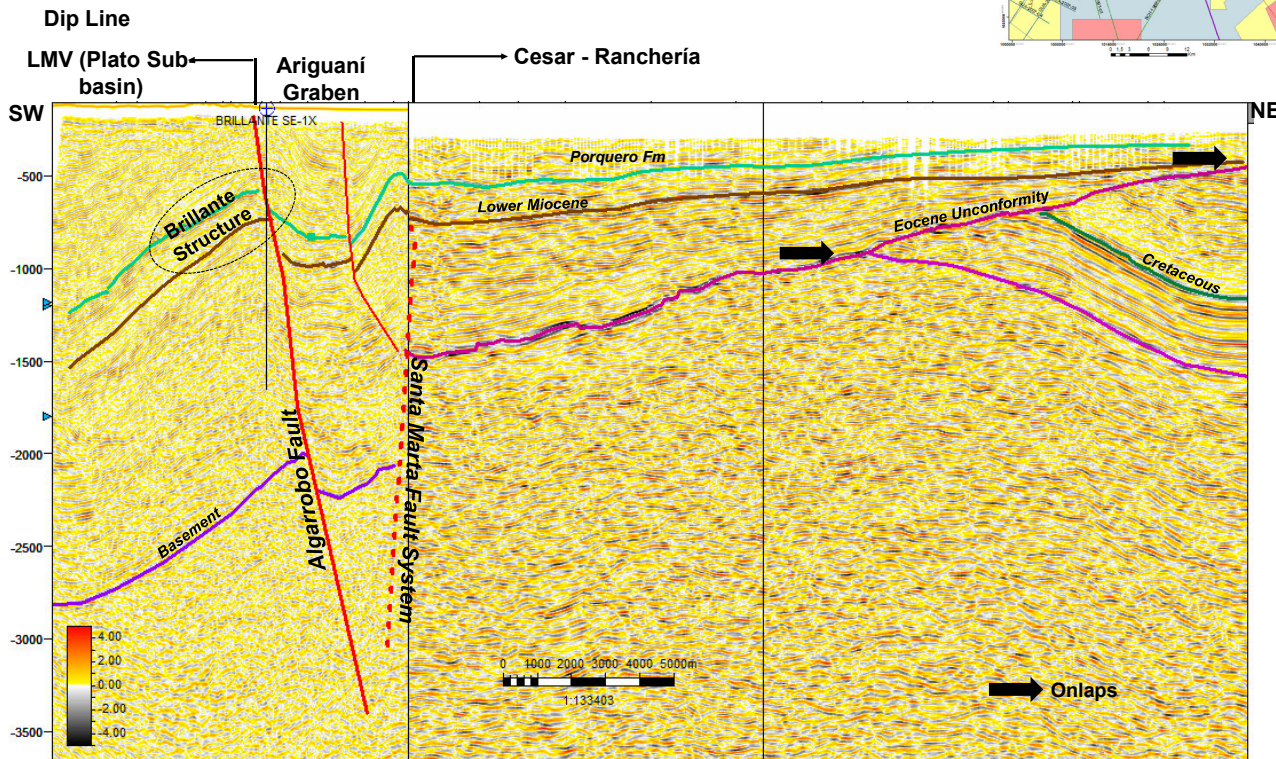
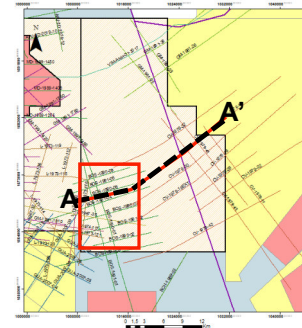
Pozo	1P	2P	3P
Brillante SE-1	10,400	11,200	12,800
TOTAL [MMcf]	10,400	11,200	12,800

jun-14	Reservas Probadas	Reservas Remanentes (MMcf)		
Gp (MMcf)	1P (MMcf)	1P	2P	3P
578.307	10,400	9,822	10,622	12,222

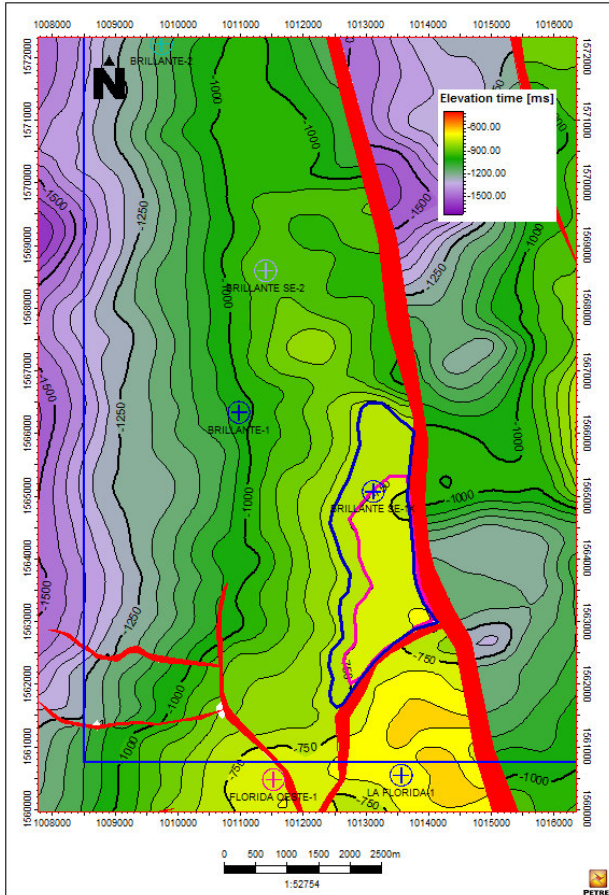
*Sierra Nevada Block Reserves distribution- Brillante-SE-1X in billion cubic feet.
The remaining reserves are defined by the economic limit of each Project.
Petrolífera, IES, Jan- 2014*

SEISMIC INTERPRETATION

- Brillante Structure:** Anticline with a three way closure against normal faults. Associated with the transcurrent Santa Marta Fault System.



VOLUMETRICS BRILLANTE SE-1X:

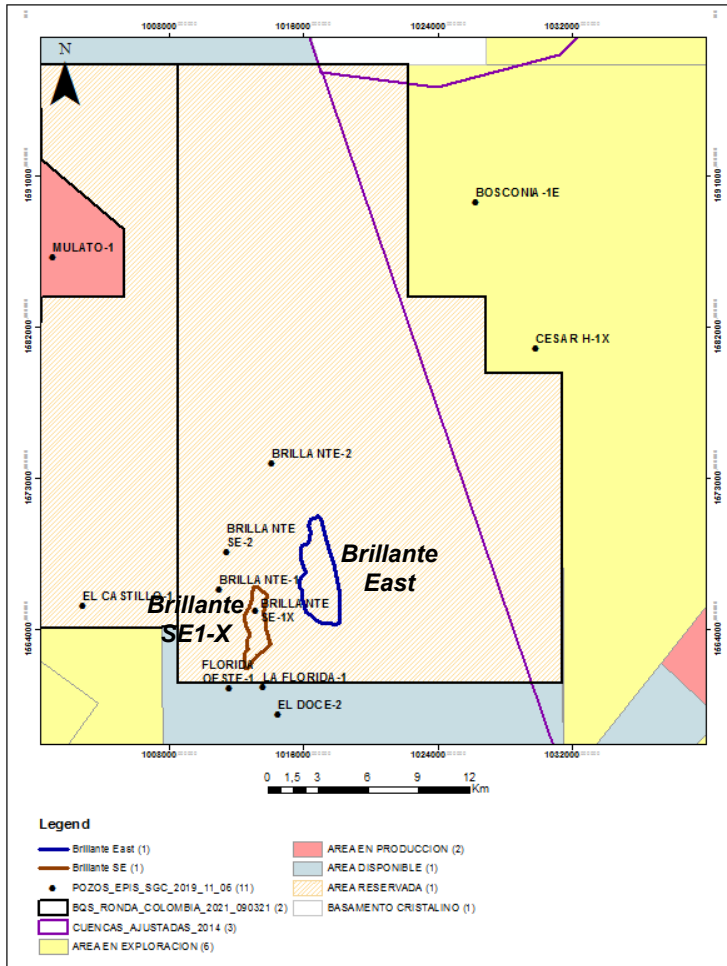


AREAS

- High Estimated: (1127 Acres)
- Best Estimated: (625 Acres)

PROSPECT	AREA (Acres)	THICKNESS (Net Pay) (Ft)	POROSITY (%)	SG (%)	Bg	OGIP (Bcf)	RF (%)	RESOURCES (Bcf)	CUMULATIVE PRODUCTION (Bcf)	REMANENT RESOURCES (Bcf)
Brillante CDO Best Estimated	625	35	0,15	0,80	0,0097	11,79	0,85	10,02	0,578	9,44
Brillante CDO High Estimated	1127	38	0,18	0,80	0,0097	27,69	0,85	23,54	0,578	22,96

VOLUMETRICS VIM-41:



CONTINGENT AND PROSPECTIVE RESOURCES

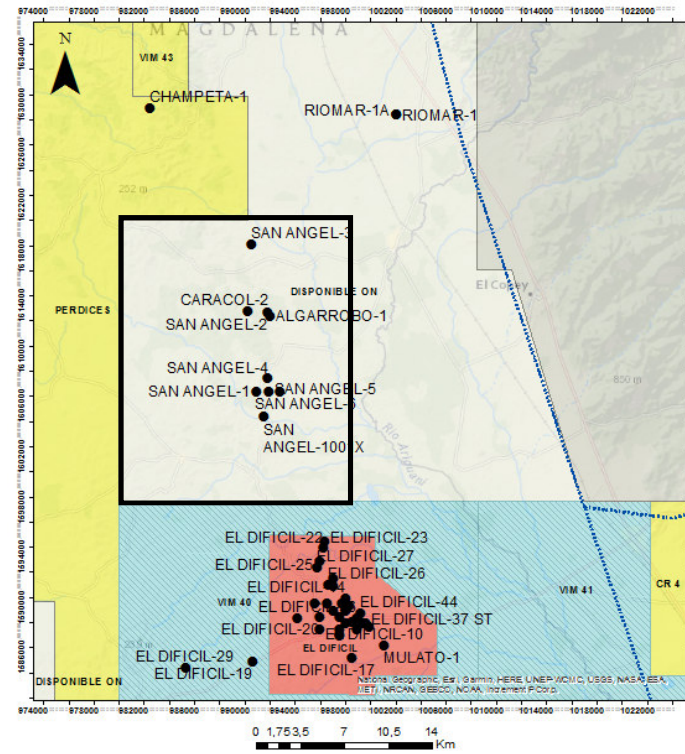
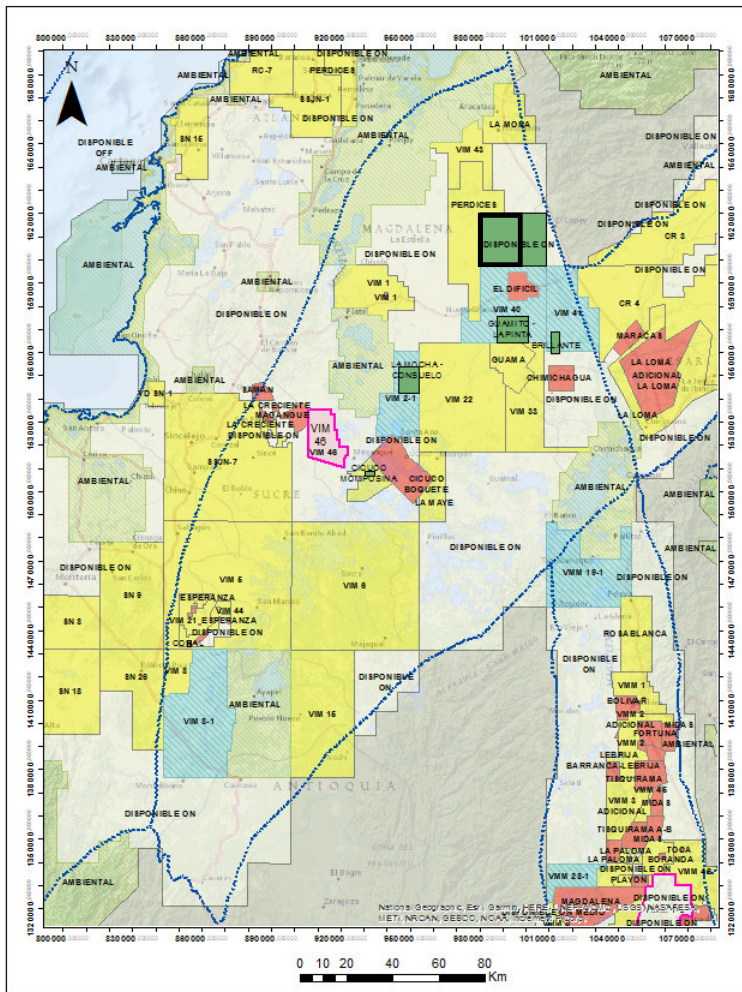
Discovered Reservoir	Area (Acres)	OGIP (Bcf)	Contigent Resources (Bcf)	Cumulative Production (Bcf)	Remanent Resources (Bcf)
BRILLANTE SE-1X	1127	27,69	23,54	0,578	22,96

Prospective Resources

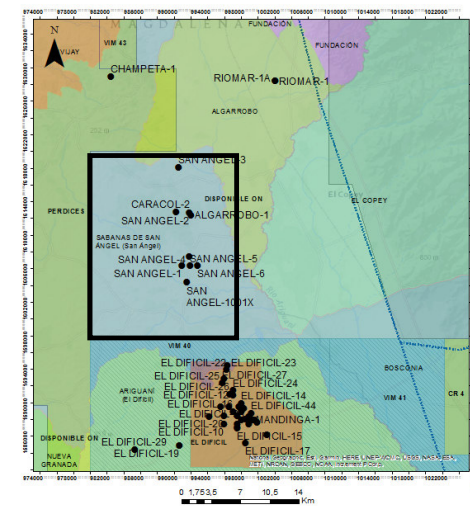
Lead	AREA (Acres)	OGIP (Bcf)	Prospective Resources (Bcf)
BRILLANTE EAST	2572	63,20	50,56

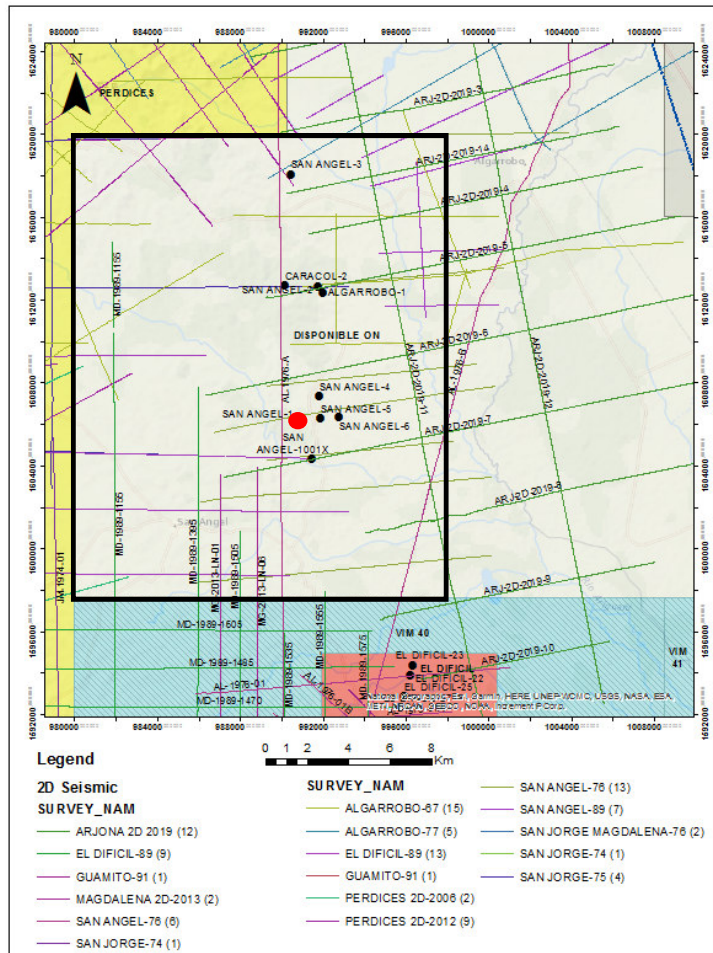
SAN ÁNGEL AREA

Location



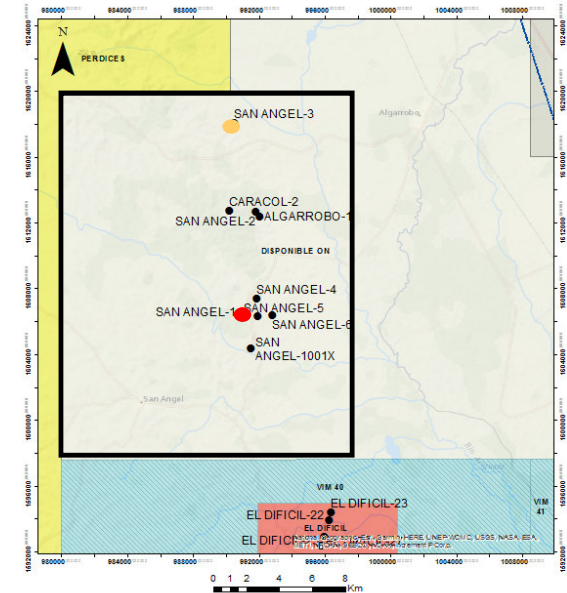
- **Department:** Magdalena
- **Municipalities:** Algarrobo and Sabanas de San Ángel.





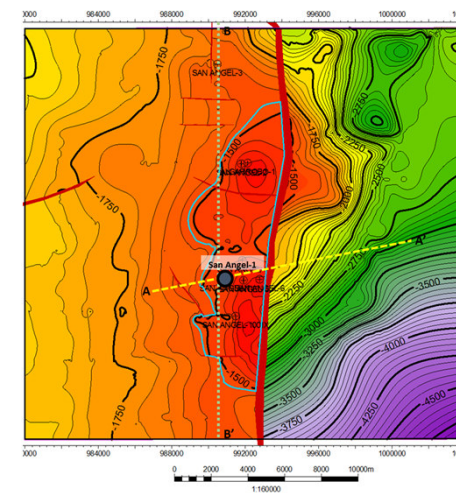
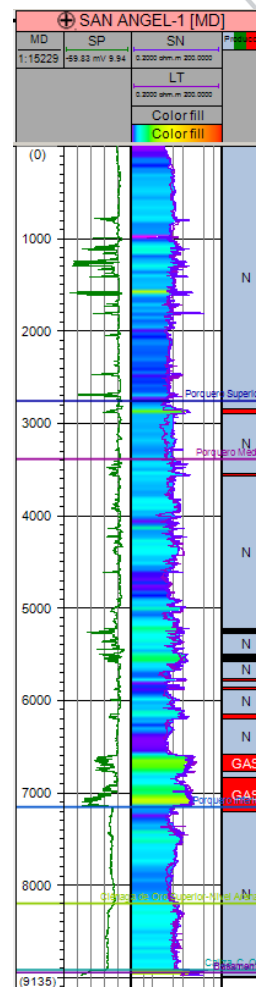
- **SEISMIC**
- **2D Seismic Surveys:**
 - Arjona 2D-2019
 - Algarrobo-77
 - El Dificil-89
 - San Ángel-89
 - Perdices 2D-2006
 - Perdices 2D-2012

WELL NAME	X (East)	Y (North)	TD DATE	TD (ft)	Ground Elevation (ft)	Well Classification	Well Status	Operator	Observations
SAN ANGEL-1	990884.2	1606333.96	21/06/1944	9132	144.4	B3	Gas Producer. San Angel-1 tested 0.56 MMcf/d for two months.	Shell	Gas accumulations in San Angel-1 are present in sand lenses with thicknesses from 10 to 50 ft between 5400-5700 ft. Although, that well had gas shows since 2548', where the strong shows were in 6900'.
SAN ANGEL-2	991787.81	1612639.22	24/11/1946	4930	132.5	B1	Abandoned - Gas Shows	Shell	Gas shows in 2844'. The mud weight was managed to control the gas shows.
SAN ANGEL-3	990481.45	1618071	11/01/1946	8938	144.4	B3	Abandoned - Gas producer	Shell	The well showed oil stains in surface, and gas shows at a depth of 3088'. In 5254', 6909' and 7798' had strong gas shows.
SAN ANGEL-4	991849.66	1607368.79	14/05/1946	6747	128.9	C1	Abandoned	Shell	Shows gas in 3346' and 3407'.
SAN ANGEL-5	991906.94	1606280.48	22/01/1946	3275	127.6	C1	Dry	Shell	Shows gas: 820' and 2696'.
SAN ANGEL-6	992785.36	1606336.9	30/08/1946	3520	120.9	C1	Abandoned by mechanical damage.	Shell	Shows gas: 2840'.
ALGARROBO-1	992003	1612373	01/07/1969	8329	399	C3	Undefined	The Superior Oil Company	The well drilled the FW of a normal fault. Did not find the producer sands. Did not find DST in open hole.
SAN ANGEL-1001X	991473.75	1604330	19/04/2011	7000	351	C3	Abandoned	Petrolifera Petroleum (Colombia) Limited	The well did not find the reservoir. DSTs found formation water in natural flow. The maximum pressure was 4906 psi @PMP.



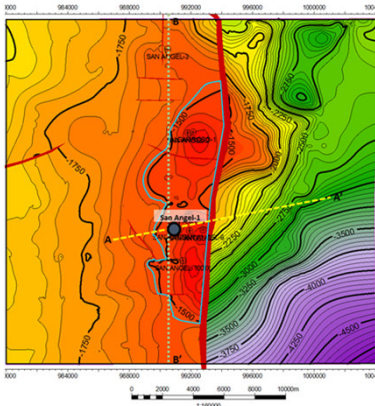
San Angel – 1 well

- Company: Shell
- TD: 9132'
- Spud date: April 23rd of 1943
- End date: June 21st of 1944
- Basement: Micaceous schists.
- It presented gas shows initiating at 2548 ft, with the most significant show at 6900 ft.
- Gas accumulations are preserved in sand lenses with thicknesses that vary from 10 to 50 ft in the interval 5400 to 5700 ft, stratigraphically located at the Middle Porquero Formation.
- Initial Production: **Gas: 560 MSCFD and water: 560 BWD**, during two months.
- The well was evaluated for four and a half months, and it was declared as non commercial gas producer.
- Not hydrocarbon production was reported from the Ciénaga de Oro Formation drilled by the San Angel 1, 3 and Algarrobo-1.

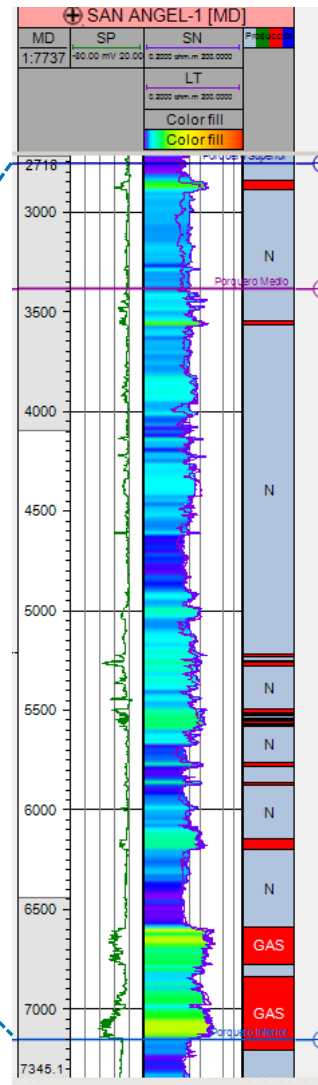
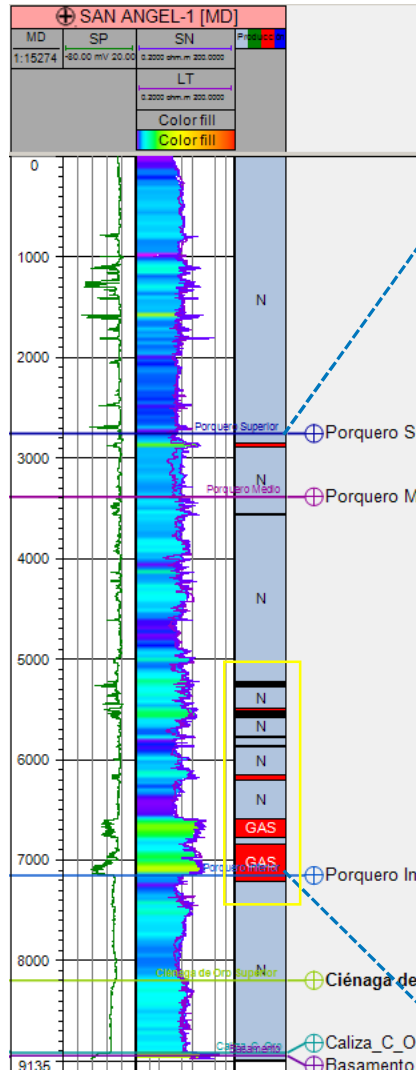


TWT Map Intra Middle Porquero

San Angel – 1 Tests



TWT Map Intra Middle Porquero



DST3 May/1944 (2,818ft)

2 hr,20min. Only one or two sporadic puffs at surface, no oil, no gas, no SW. After pumping water into formation, the well flowed M.S.W 900bbl daily Sal Agr/ltr-little gas for 1 3/4 hr

DST2, May/1944 (3,450ft) Little gas

2-6hr: Slight blow at surface for first hour

Add. Flow Test (5,219-5,874ft): 500-600 bbl SW(17gr/ltr) on 7d -> 86 bwpd + 675 MCF gas

(5538-5547ft): 2d/404-636 bbl SW (16,5gr/ltr)+ 799-930 MCF gas

(6148-6201ft): 7d: little SW (14gr/ltr) + Est. 1,200 MCF gas

DST1 (6588-6773, 6868-7207 ft) Jan 1944
11 d/224 bbl SW (19 gr/lt)+**30MCF gas**

San Ángel – Intra Porquero



El futuro es de todos

Minenergía

GENERAL INFORMATION

Lead: VIM24 - SAN ANGEL
Target: IntraPorquero

P10 Area: 11938 Acres

DEPTH TO TOP OF Upper Ciénaga de Oro Formation (ft): 4955

FINAL DEPTH Upper Ciénaga de Oro(ft): 7149

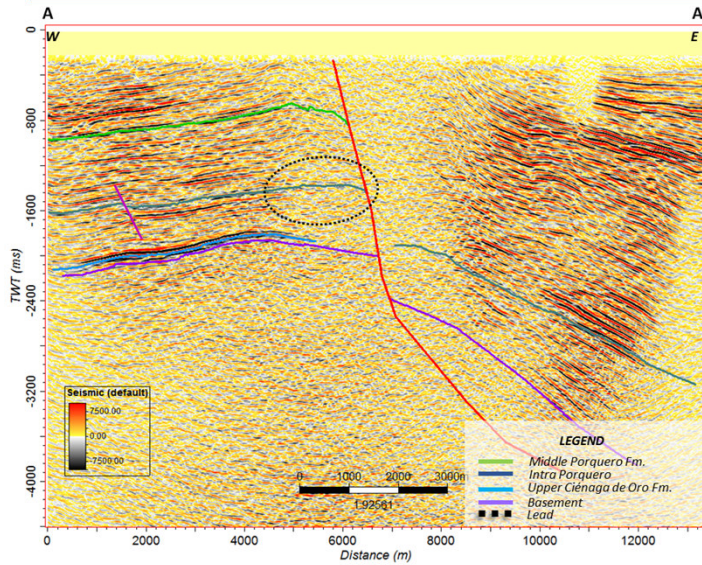
TRAP: Structural

LATERAL SEAL: Against fault

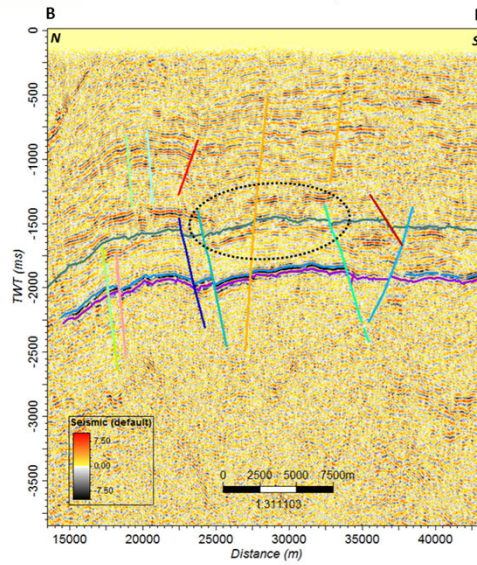
VERTICAL SEAL: Clay levels of Middle Porquero

SOURCE: Oligocene - Miocene Formations act as source rock and reservoir

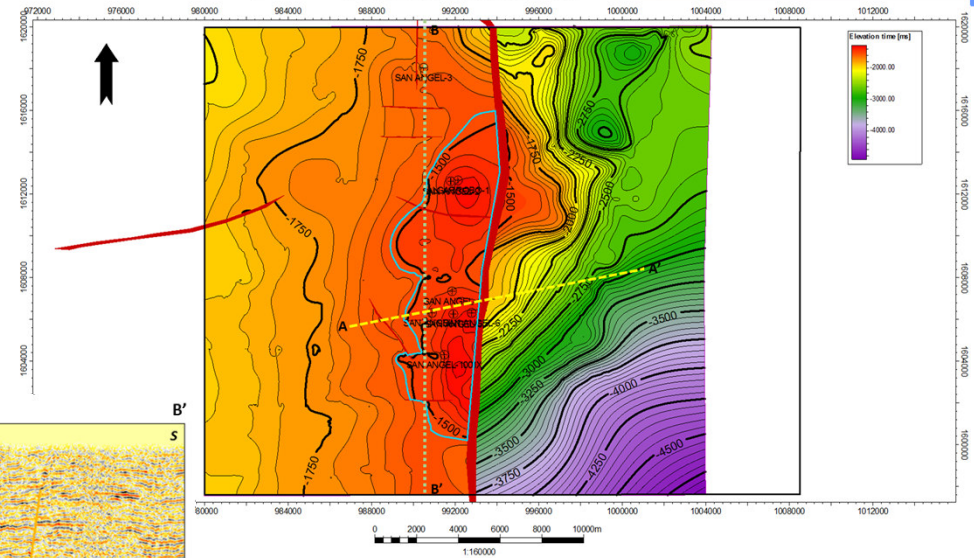
MAIN RISK: Reservoir - Lateral facies change



2D Seismic line AL-1976-04 (Dip Line)

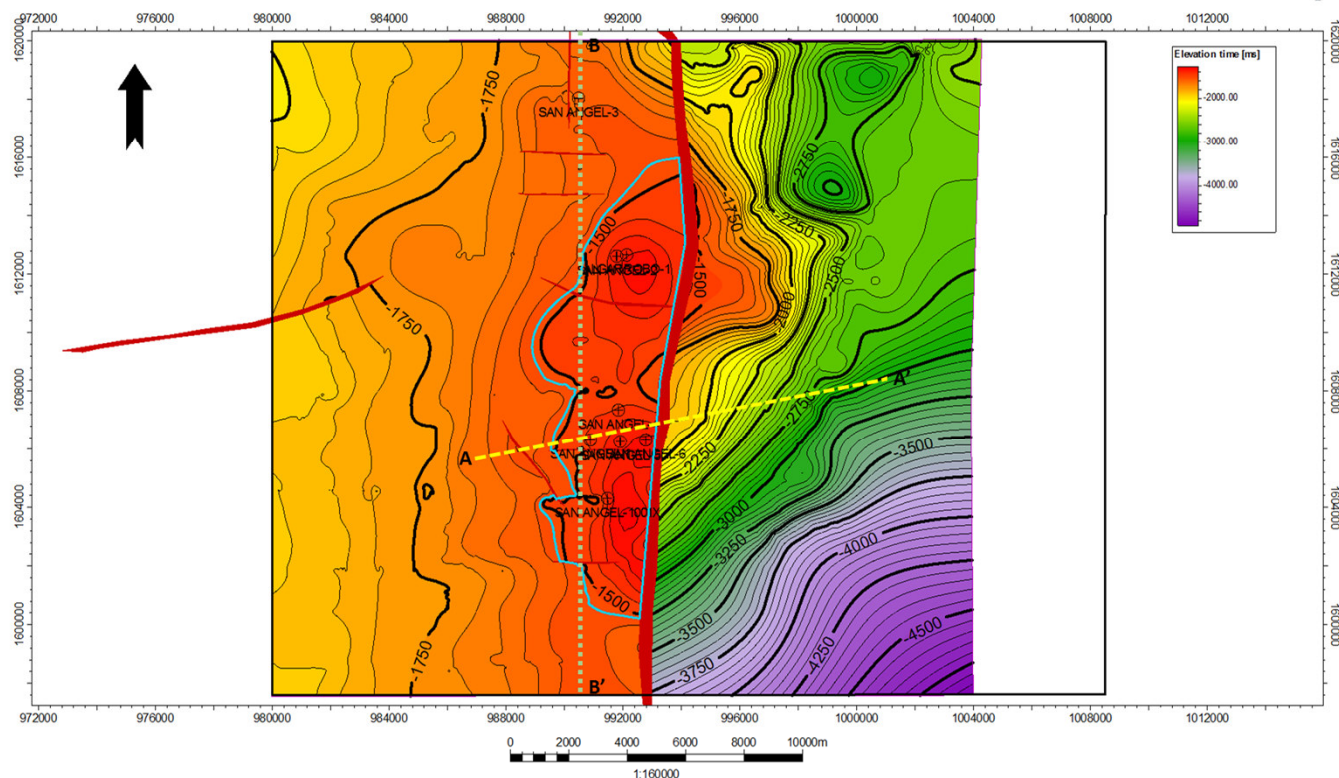


2D Seismic line AL-1976-A (Strike Line)



TWT map (ms). Top of Intraporquero

San Ángel – Intra Porquero

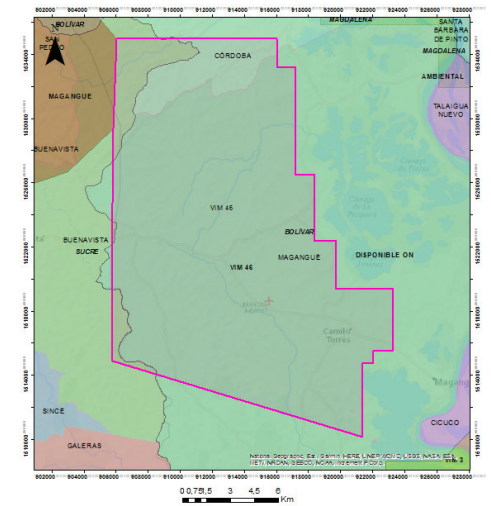
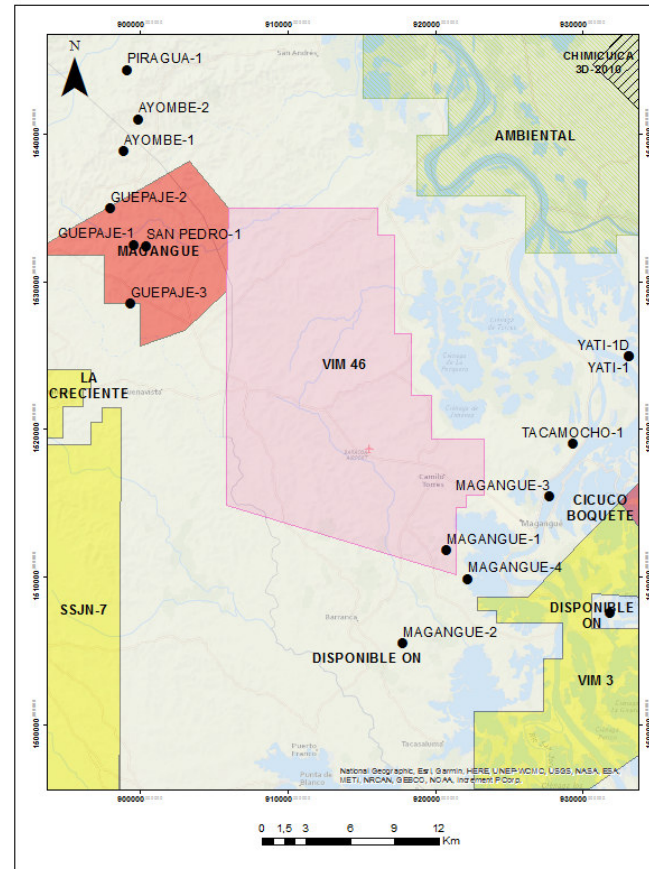
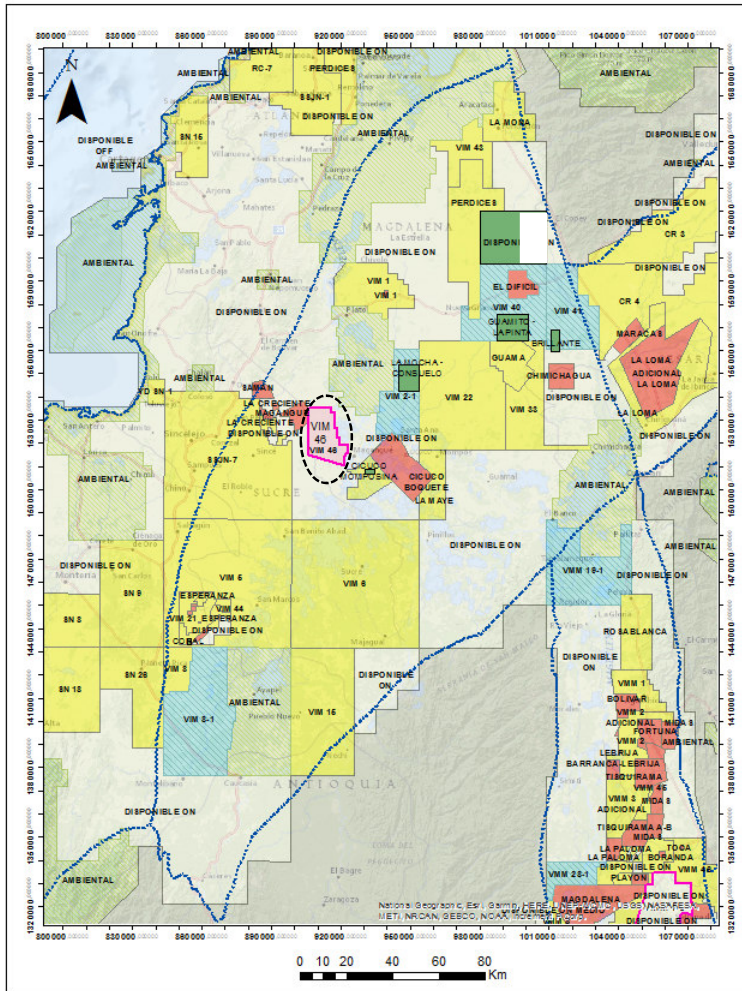


TWT map (ms). Top of Intraporquero

LEAD	AREA (Acres)	THICKNESS (Net Pay) (Ft)	POROSITY (%)	SG (%)	Bg	GOES (Bcf)
VIM 24 San Angel Intra Porquero P90	1045	12	0.12	0.85	0.032	1.74
VIM 24 San Angel Intra Porquero P50	5753	20	0.15	0.85	0.032	19.97
VIM 24 San Angel Intra Porquero P10	11938	30	0.18	0.9	0.032	78.98

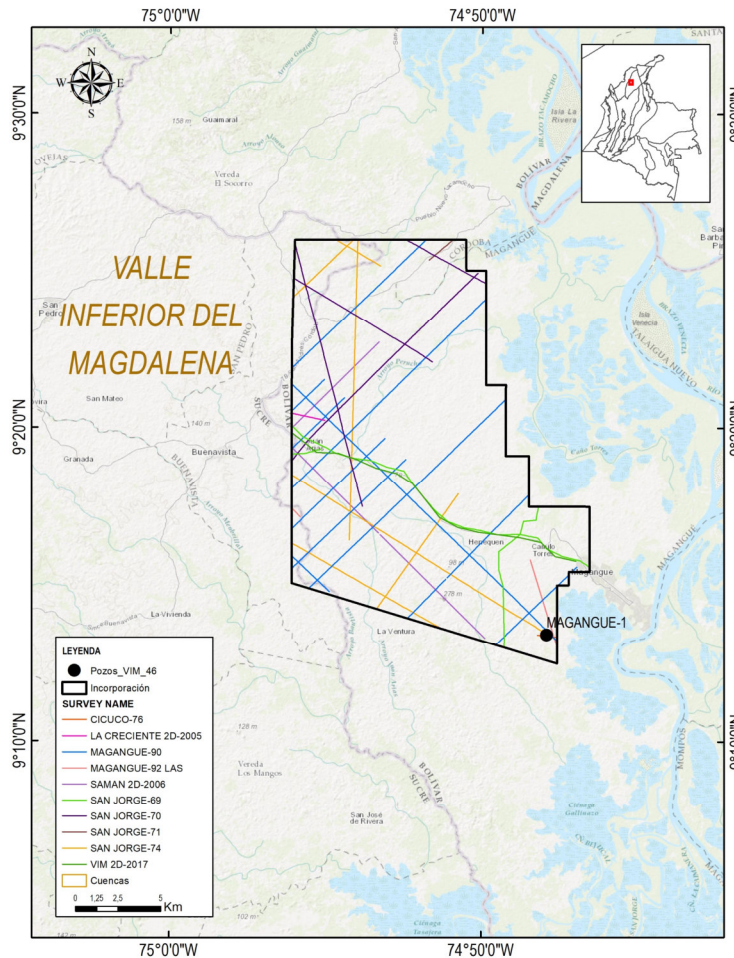
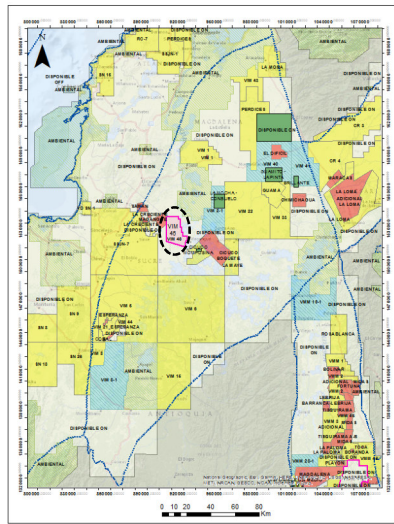
INCORPORATED AREA VIM 46

Location



- **Area:** 30269,78 Ha.
- **Departments:** Sucre, Bolívar
- **Municipalities:** Córdoba, Magangué, Buenavista.

DATABASE : 2D Seismic



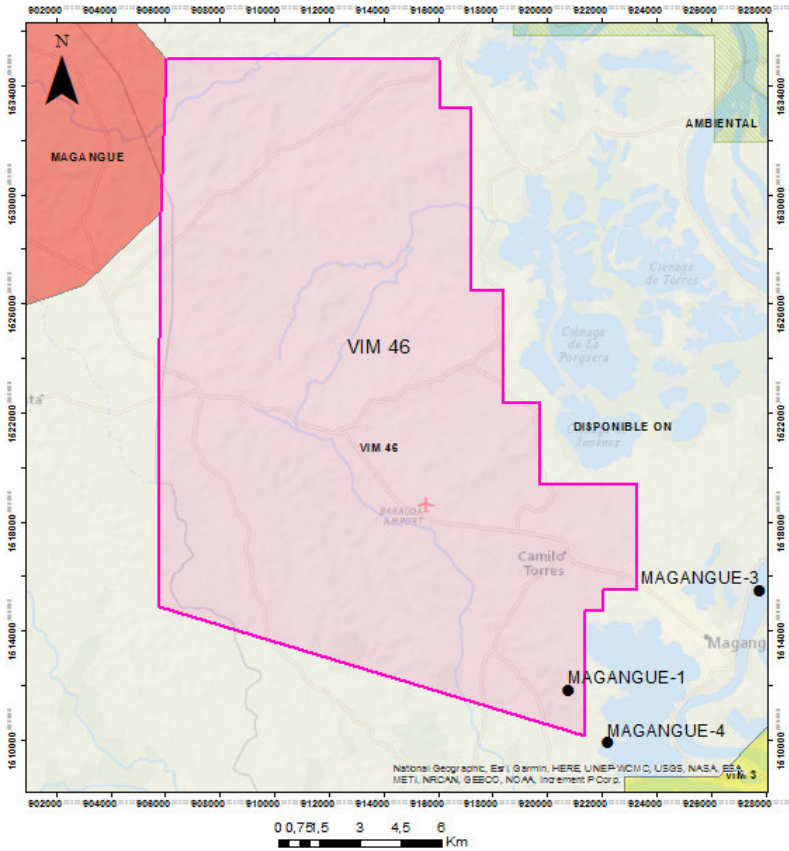
- **SEISMIC**
- **2D Seismic Surveys:**
- Cicuco-76
- La Creciente D-2005
- Magangué-90
- Magangué 92 LAS
- Samán 2D 2006
- San Jorge-69
- San Jorge-70
- San Jorge-71
- San Jorge-74
- VIM 2D-2017
- **Length: 300,86 Km**

DATABASE : Wells



El futuro es de todos

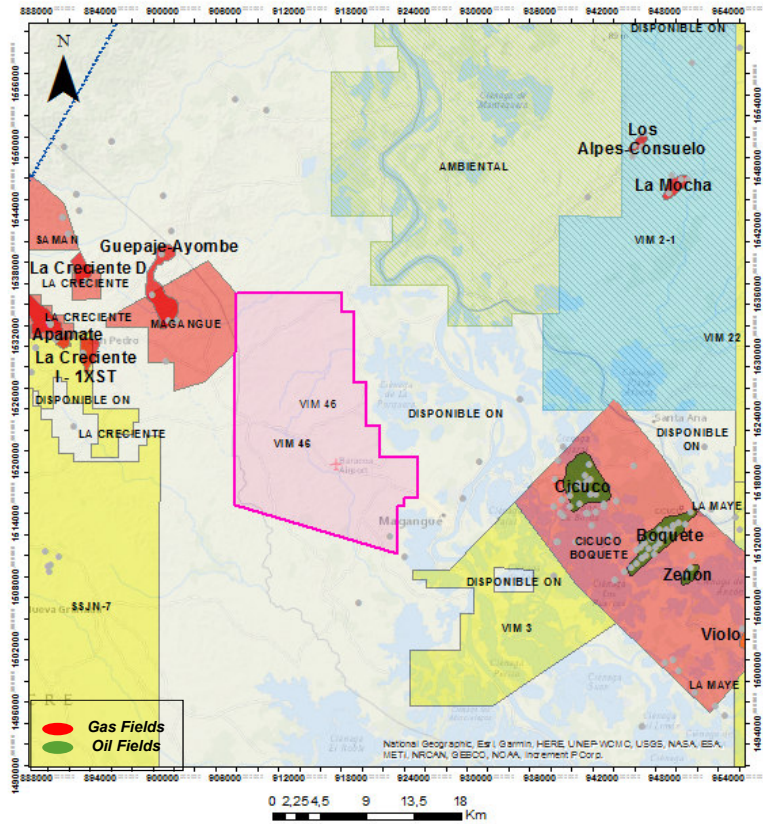
Minenergía



WELL SUMMARY

WELL	TD (ft)	YEAR	STATUS	COMPANY
MAGANGUÉ-1	7021	1951	Plugged ad abandoned	Compañía de Petróleo La Rosa
MAGANGUÉ-3	8982	1963	Plugged ad abandoned	International Petroleum (Colombia) Limited
MAGANGUÉ-4	7904	1963	Plugged ad abandoned	Intercol

NEAR FIELDS

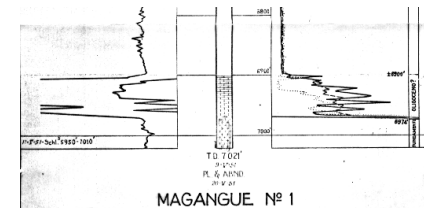
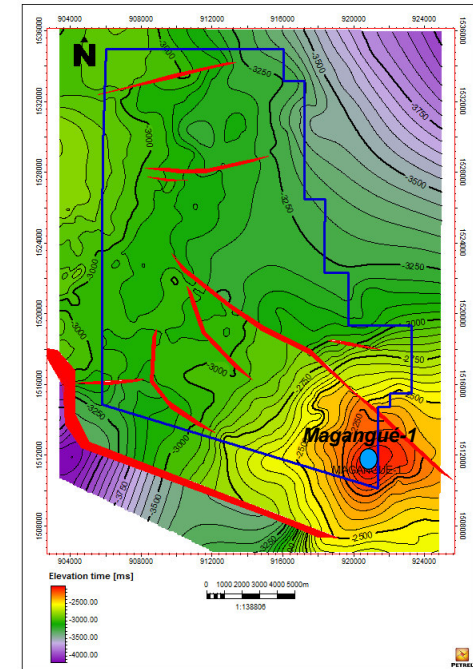
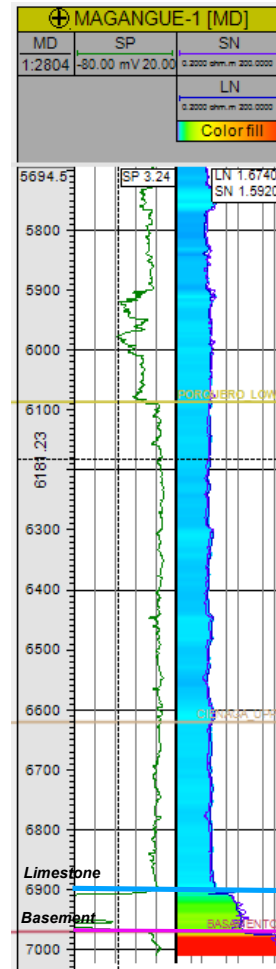
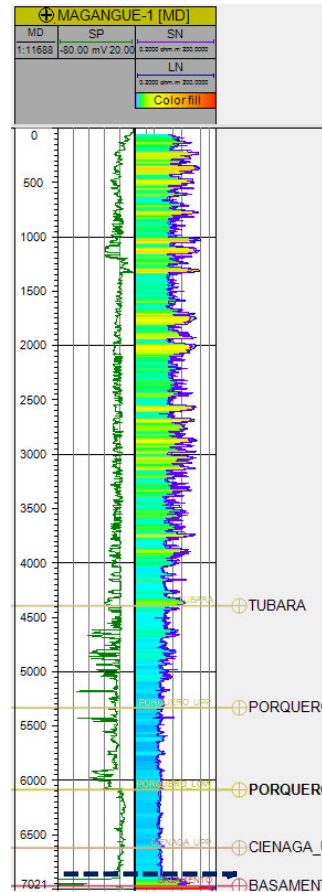


NEAR FIELDS

FIELD	CONTRACT	EXPLORATION PLAY	FLUID	PRODUCTION	YEAR	OGIP (Bcf)
EL DIFÍCIL	EL DIFÍCIL	EARLY MIOCENE	GAS/OIL	11,5 MMBO, 344 BCF	1942	839.01
SAN ANGEL	MAGDALENA	INTRA PORQUERO	GAS	0.56 MMcfd for two months	1944	
JOBO TABLÓN	VIM-21	UPPER C ORO - PORQUERO	GAS	200 BCF	1947	
CHINÚ	SSJN-7	PORQUERO	GAS	19 BCF	1956	
CICUCO	CICUCO	C ORO	OIL	51 MMSTBO & 196 BCF	1956	1465.52
VIOLÓ	CICUCO	C ORO	GAS	2,6 BCF	1958	
ZENON	CICUCO	C ORO	OIL		1959	
BOQUETE	CICUCO	C ORO	OIL	18 MMSTBO & 38 BCF	1961	458.85
ARJONA	CHIMICHAGUA	C ORO	GAS	Reservas 195 BCF	1961	19.50
LA MOCHA	ANH	TUBARÁ	GAS	3 BCF	1963	
LOS ALPES-CONSUELO	ANH	TUBARÁ	GAS	2 BCF	1963	
GUAMITO - LA PINTA	ANH	PORQUERO	GAS	5 BCF	1975	
SUCRE	VIM-5	C ORO	GAS	37 BCF	1977	
CASTOR	ESPERANZA	C ORO	GAS	16 BCF	1980	
SUCRE SUR	VIM-5	C ORO	GAS	5 BCF	1981	
EL DESEO	SSJN-7	PORQUERO	GAS	1 BCF	1989	
MOMPOSINA	CICUCO MOMPOSINA	C ORO	GAS	2.9 BCF	1990	
GUEPAJE	AYOMBE	C ORO	GAS	89 BCF & 52 KSTB	1992	
LA CRECIENTE A	LA CRECIENTE	LOWER C ORO	GAS	402 BCF	2006	301.20
LA CRECIENTE D		LOWER C ORO	GAS	32,6 BCF	2006	9.16
LA CRECIENTE I		C ORO	GAS	31 BCF	2009	14.55
APAMATE	ANH	PORQUERO - C ORO	GAS	Reservas 14 BCF	2010	
BRILLANTE	ESPERANZA	C ORO	GAS	11 MMscfd	2011	342.76
BONGA	SAMÁN	LOWER C ORO	GAS	200 BCF	2012	52.37
MAMEY	SAMÁN					146.53

Magangué-1 Well

- Magangué-1 Well
- Operator: CIA de Petróleo La Rosa de Colombia
- Spud Date: 10/04/1951
- Comp Date: 20/05/1951
- TD: 7021'
- Status: Dry
- Without tests
- Limestone: 6900' - 6974' (Ciénaga de Oro Fm.)
- Basement: Igneous basement

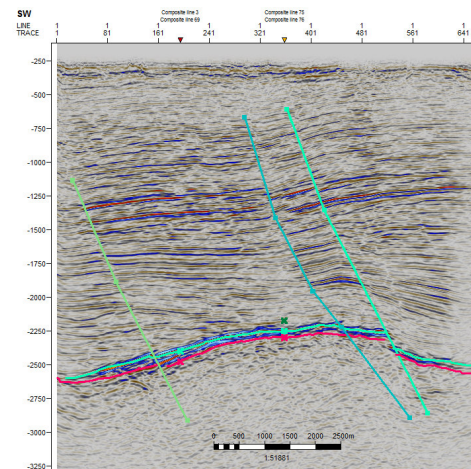
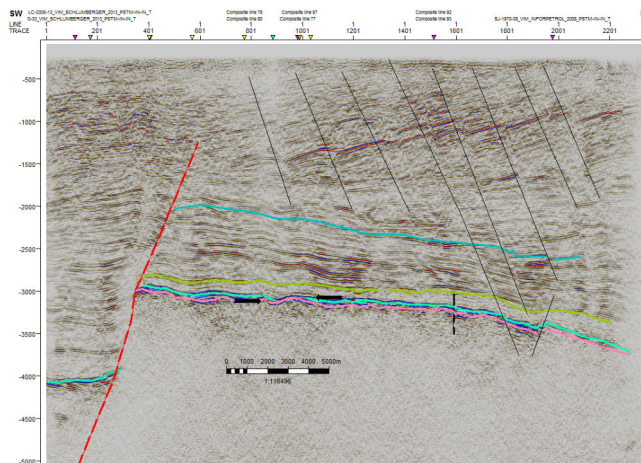
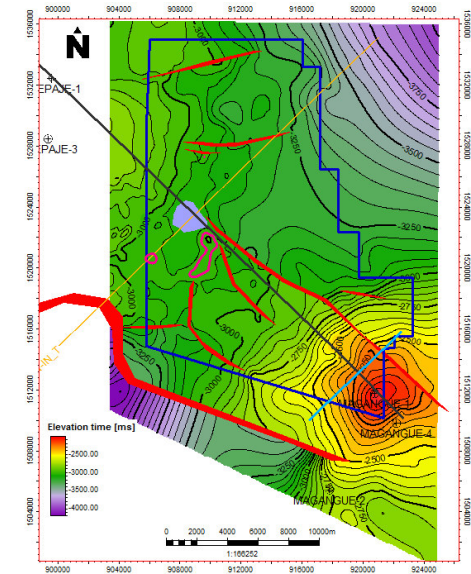
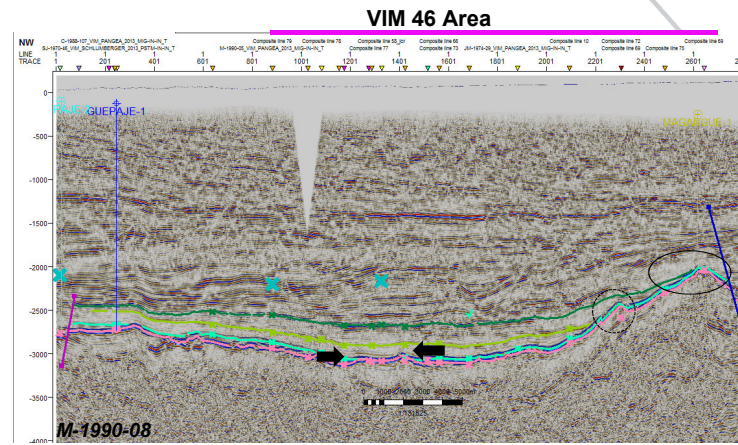


SEISMIC INTERPRETATION

PLAYS

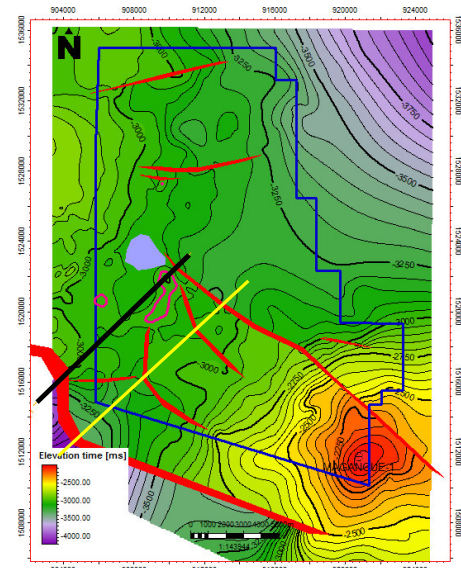
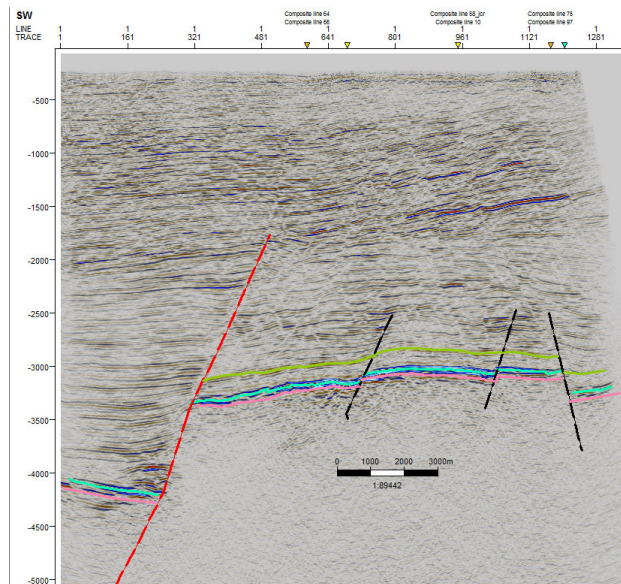
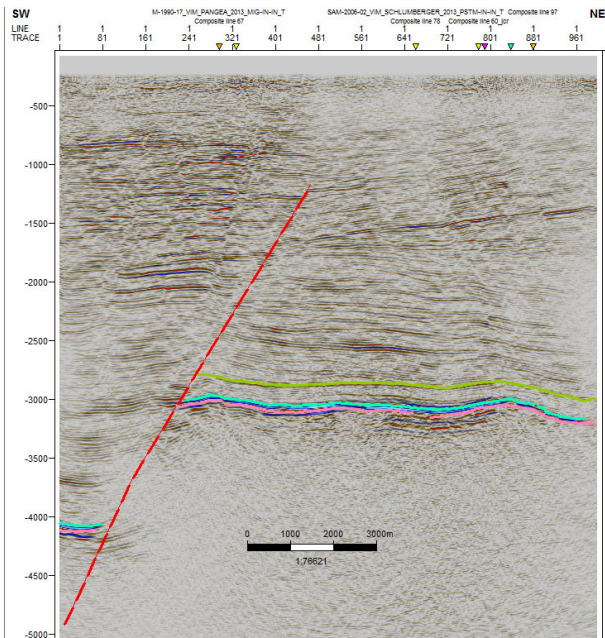
- Onlap of Ciénaga de Oro against the basement paleohighs (Magangué-1 well).
- Structural highs controlled by the basement configuration and of the normal faults (East)

Guepajé Field: Produces gas in Ciénaga de Oro Fm, 89 BCF and 52 Kbo



SEISMIC INTERPRETATION

- **PLAYS**
- Structural highs controlled by the basement configuration.
- Structural highs controlled by normal faults



CONCLUSIONS

- The ANH is offering six areas where there was some discovery or production in the LMV and they were returned to the ANH. Some of them are located within areas of the Colombia round 2021 and others are in available areas by the ANH. On the other hand, this section included an incorporated area (VIM-46) nominated by a company.
- Coral-3 corresponds to a faulted anticline tested at the top of the Ciénaga de Oro Fm. The well had an initial production of **6.5 MMSCFD** in the SW flank of the structure, and the recoverable reserves were estimated to be of the order of **16,2 BCF (58% of OGIP ≈ 27,6 BCF)**. The ANH calculated that the structure still has 23,7 BCFs of gas high estimated to be recovered with a well to be drilled at the top of the structure.
- Momposina is a structural high that produced from the Ciénaga de Oro Formation, with OGIP of **17 BCFs and OOIP 0,5 MMBLS**. The accumulated volumes were of **93,308 bbls of crude, 2,98 BCF of gas and 808,674 bbls of water**, leaving **11 BCFs reserves** still to be recovered at the Ciénaga de Oro Fm. The well was closed by low volume gas production, presence of H₂S and high water production.
- The Mocha structure corresponds to a faulted anticline, that had two discoveries in the Tubará Formation during the sixties: La Mocha-1 and La Mocha-2, were considered two independent gas reservoirs, where the cumulative production was of **632.859 MCFG** from May, 1969 to December, 1971. La Mocha 2 block seems to be the best producer with still additional reserves.

CONCLUSIONS

- The Consuelo anticline was drilled by Consuelo-1, 2 and 3 shallow wells, that produced gas from Tubará Formation. They had a cumulative production of 4,5 BCF from 1966 to 1971. These wells were drilled **near to gas-water contact, and in 1973 they were completely invaded by water.**
- The Guamito-1 well presented several hydrocarbon shows during drilling. The test results indicated presence of liquid and gaseous hydrocarbons at the Intra Porquero level 8,750 feet, 120 BOPD 47.7° API/ 750 KSCFD and at the top of the Ciénaga de Oro Formation 406 BOPD 46.9° API/ 1.8 MMSCFD.
- The La Pinta-1 well produced from the Middle Porquero and Ciénaga de Oro Formations, where the last accumulated production reported was **3,176 bbls of oil, 524 bbls of water and 12,643 kscf of gas.**
- The hydrocarbon producer well in the Brillante area, the Brillante SE-1X, is located in trend SE-NW 15 kms apart from the Arjona Field. The Brillante area is estimated to hold **9,4 BCFs to have remanent resources** in the best estimate. The main reservoir is the Ciénaga de Oro Fm in a sandstone package with 105 feet net pay. From august, 2011 to february, 2014, Brillante SE-X produced **578 MMSCF, 2687 BLS of oil and 44 Bls of water.**
- The San Angel- 1 well found gas accumulations in sand lenses with thicknesses that vary from 10 to 50 ft in the Middle Porquero Unit. The well tested 675 MCFGD in the interval 5,219-5,874 feet. The well also tested 1.26 MMCFGD in the interval 6,148-6,201 feet close to the Intra Porquero top. The well had an initial production of 560 MSCFD and water of 560 BWD, during two months. The well was evaluated for four and a half months, and it was declared as non commercial gas producer.
- The evaluation of the incorporated area in the LMV, VIM-46 shows stratigraphic and structural traps, related to the basement configuration with the deposit of the Ciénaga de Oro Formation.

Thanks

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