

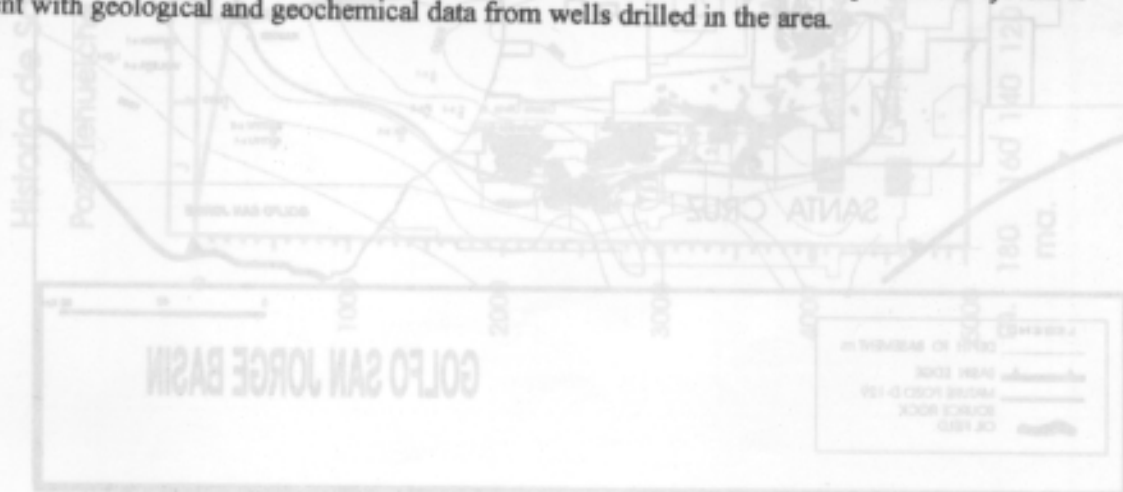
IMPORTANT ELEMENTS OF THE CHUBUTIANO PETROLEUM SYSTEM, OFFSHORE SAN JORGE BASIN, ARGENTINA

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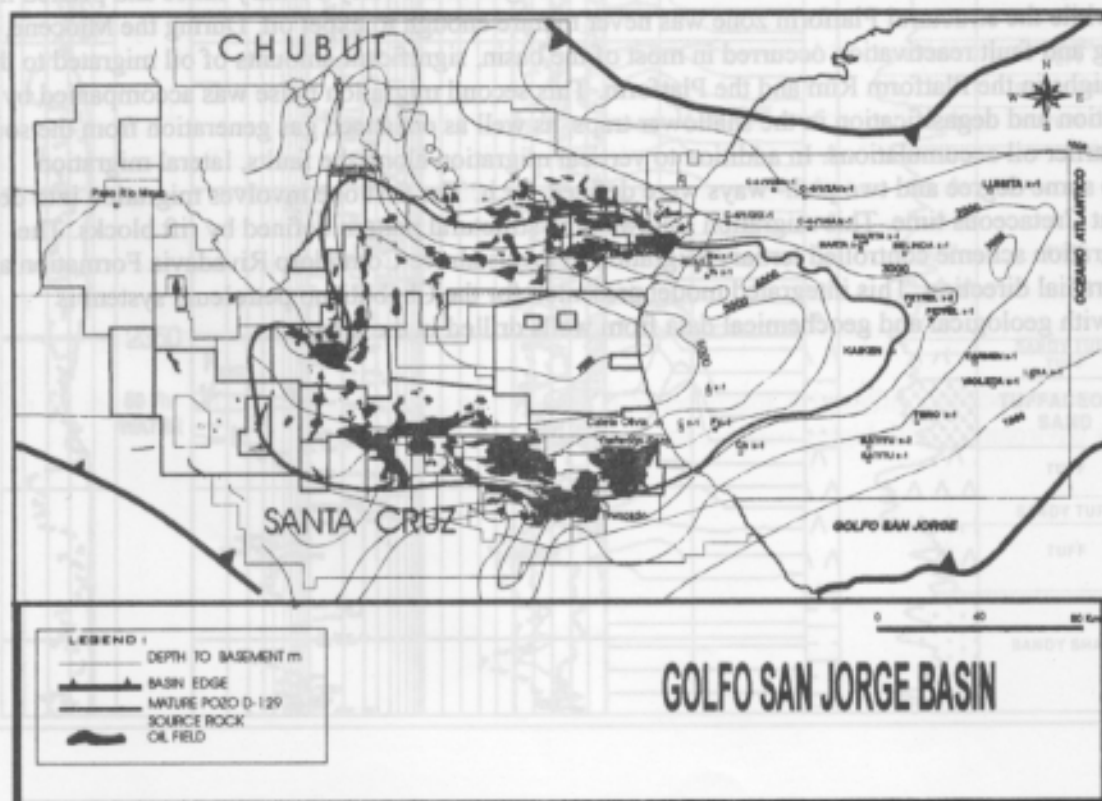
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San Jorge Basin (Argentina) is a Jurassic and early Cretaceous rift basin that later evolved into a Cretaceous and Tertiary sag basin. Here we present a model for the Chubutiano petroleum system, offshore San Jorge Basin. This petroleum system is responsible for most of the oil discovered and produced in the basin. The source material is type II or type I/II kerogen in the lacustrine shales and oolitic limestones of the Pozo D129 Fm. Reservoir rocks include fluvial and deltaic sandstones in the Yacimiento El Trebol Fm., Comodoro Rivadavia Fm. and the Mina El Carmen Fm. and shallow-marine facies in the Salamanca Fm. The Mina El Carmen, middle Yacimiento El Trebol and upper Salamanca Formations are regional seals. The structural style indicates the fragmentation of the basin into extensional blocks (horsts, grabens and half-grabens) during the rifting stage. Later, during the sag stage, these structural blocks still controlled the thickness of the sag record. On the other hand, as a consequence of the more regional thermal subsidence at the sag stage, the basin was divided into three tectonic domains: Platform, Platform Rim and Basin Center; these domains controlled the development of all of the elements of the petroleum system. During the Tertiary, the basin continued to subside and experienced a tectonic reactivation event that in the offshore part of the basin was recorded as a transtensional Miocene pulse. This deformation reactivated many of the older structures. This complex tectonic history developed two basic types of traps: older traps, above the high rift blocks and new traps formed at Miocene at the edge of different structural blocks.

Oil expulsion in the offshore San Jorge Basin occurred progressively as different structural blocks moved into the oil window. When initial expulsion occurred in the Basin Center, the only seals were Mina El Carmen Formation shales, and it is unlikely that accumulations from this migration episode occur above this formation. Expulsion in the structural Platform Rim zone begun in the early Tertiary times and peaked in the Miocene, while the structural Platform zone was never mature enough to expel oil. During the Miocene, when tilting and fault reactivation occurred in most of the basin, significant amounts of oil migrated to the structural highs in the Platform Rim and the Platform. This second migration pulse was accompanied by biodegradation and degasification in the shallower traps, as well as enhanced gas generation from the source and from earlier oil accumulations. In addition to vertical migration along the faults, lateral migration occurred to some degree and two path- ways were defined for it. The first one involves migration into deep reservoirs at Cretaceous time. This migration followed the structural pattern defined by rift blocks. The second migration scheme controlled tertiary migration in levels above Comodoro Rivadavia Formation and it followed a radial direction. This integrated model presented for the Chubutiano petroleum system is consistent with geological and geochemical data from wells drilled in the area.



CRETACEOUS												TERTIARY					GEOLOGIC TIME SCALE		PETROLEUM SYSTEM EVENTS
Be	Vd	Hd	Bd	Ap	Ab	Se	Tu	Co	Sa	Co	Ma	Pa	Lo	Ch	Ma				
OLDER ROCKS												SALAMANCA Fm.					TERCIARIO INDIFERENCIADO		STRATIGRAPHY
POZO D1 29 Fm.												YAC. EL TREBOL Fm.							Source Rock
MINA EL CARMEN Fm.												COMODORO RIVADAVIA Fm.							Reservoir Rock
																			Seal Rock
																			Overburden Rock
																			Trap Formation
																			Gen- Migr- Accum
																			Preservation Time
																			Critical Moment



STRATIGRAPHY AND SEDIMENTOLOGY OF THE UPPER CRETACEOUS AND LOWER TERTIARY AT THE NORTHERN FLANK OF SAN JORGE BASIN, ARGENTINA

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The Golfo San Jorge Basin is located on the south east of Argentina. It is a Jurassic rift basin that evolved to a Cretaceous and tertiary sag basin. The Upper Cretaceous and Lower Tertiary record at the northern flank of Golfo San Jorge Basin involves different reservoirs that are collectively known as Complex L. In this paper we expose a sedimentological and stratigraphic model for these reservoirs.

The lower unit of Complex L is the Mina El Trebol Fm, it is composed of a 500 m thick sandstone unit, which is overlain by a 100 m thick shale unit. The upper half of the Mina El Trebol Fm is composed of a 500 m thick sandstone unit, which is overlain by a 100 m thick shale unit. The upper half of the Mina El Trebol Fm is composed of a 500 m thick sandstone unit, which is overlain by a 100 m thick shale unit. The upper half of the Mina El Trebol Fm is composed of a 500 m thick sandstone unit, which is overlain by a 100 m thick shale unit.

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