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

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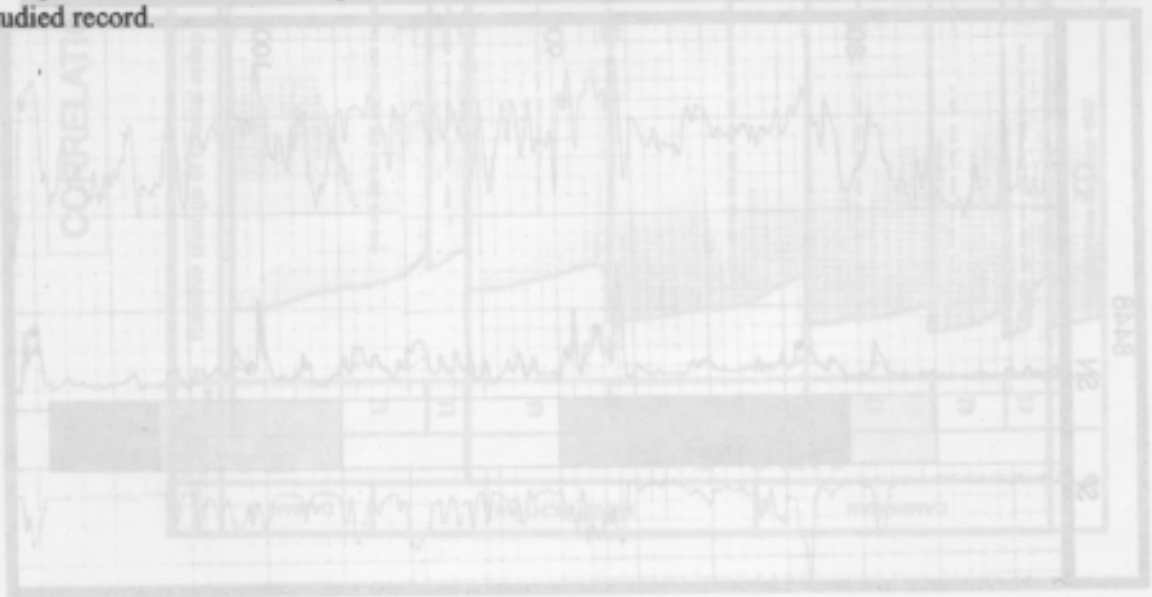
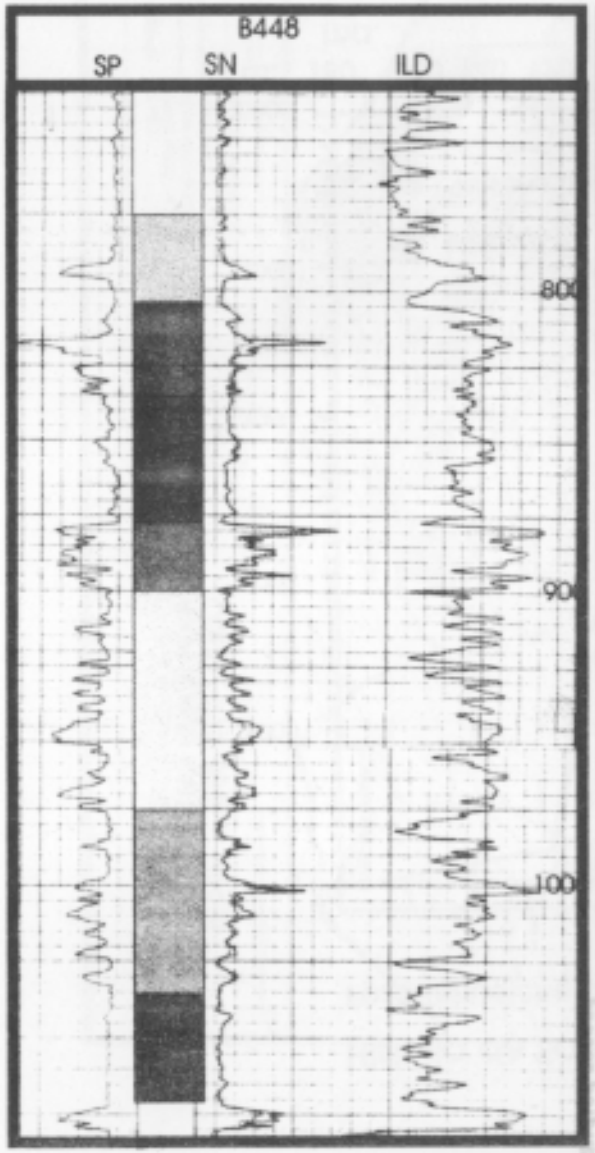
The Golfo San Jorge Basin is located on the south east of Argentina. It is a Jurassic rift basin that evolved to a Cretaceous and tertiary sag basin. The Upper Cretaceous and Lower Tertiary record at the northern flank of Golfo San Jorge Basin involves different reservoirs that are collectively known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

The lower unit of Complex I is the Member Valle C of Yacimiento El Trébol Fm, it is composed of a 50 m. thick shale overlaid by a 150 m. thick coarsening up and thick- ening up sandy package. Valle C SP patterns are predominantly funnel shape in the lower half of the unit and bell shape in the upper half. Core data from the upper part show facies that were interpreted as fluvial and deltaic. The net sand map of this succession shows a digitated distributary pattern advancing from a NNW direction. Seismic sections show at the base of Valle C interval a group of reflections that onlap from the south to the north of the basin and that are overlaid by another group characterized by downlap and offlap terminations showing progradation from N. to S. The Valle C record is interpreted as a current dominated deltaic to fluvial depositional system that prograded in a SSW direction into a lacustrine or estuarine depositional system. Valle C sandstones are overlaid by a succession of sandstones and shales known as the Glauconitic Member of the Salamanca Formation. The succession begins with a 30 m. thick, net based interval of gray quartz sandstones and conglomerates with bell type SP pattern overlaid by a shale interval called Horizonte Madre. Immediately above there is a 60 m. thick succession of gray shales, rich in plant fossils that interbed with grey quartz and green glauconitic sandstone beds in a coarsening up and thickening up arrangement with funnel shape SP pattern known as Horizonte Lignitifero . This succession can be assigned to fluvial, lagoon and estuarine deltaic environments. The succession continues with a shaly glauconitic sandstone interval, 20 meters thick with a net base and barrel shape followed by a 50 m. section of platform shales known as Secci—n Fragmentosa. The sand isopach map of the glauconitic sandstones shows a belt trending in E-W direction. These glauconitic sandstones are interpreted as marine coastal deposits, possibly sand bars that heralded the marine transgression over the basin. Seismic sections show at the top of Valle C sequence a group of reflections that onlap from S to N.

Existing stratigraphy in the area can be interpreted as two main depositional cycles related to basin scale processes. The Valle C cycle shows a progressive filling of the basin and it involves a progressive reduction of the accommodation space as are sult of the waning subsidence of the late sag stage. The Salamanca cycle records the progressive transgression of the Atlantic Ocean over the basin; this transgression is related to an episode of basin scale subsidence. Five lower scale units were identified in the studied record.



STRATIGRAPHY



LITHOLOGY	GRAIN SIZE Coarse – Fine	FOSSILS	ENVIRONMENT Plat Est Lac Delt Flv	SYSTEM TRACT	AGE	SEQUENCE	SEQUENCE SET
Gray Shale Glauconite	↑	Fish tooth And scales Brachyopods Bryozoos Molluscs Oysters	Shallow Platform	HS	Danian (2) 71 ma (1)	Glauconitico Fragmentoso	SALAMANCA
Glauconitic Sandstone Shell beds	↗	Shark tooth Molluscs	Shallow marine Estuarine	TR			
Sandstone	↖	Plant stems and leaves Fern branches	Deltaic?	LS			
Sandstone Gray Shale Dark gray shale	↑	Plant stems and leaves Fern branches	Lacustrine Swamp	HS TR		Hte. Madre Lignitifero	
Conglomerate and sandstone	↗		FluVial	LS			
Siltstone Sandstone	↑ ↖		FluVial Deltaic	HS TR LS		C	VALLE C
Siltstone Sandstone	↑ ↖		Deltaic	HS TR LS		B	
Gray Shale	↑	Polen Nannofossils	Lacustrine	HS TR	80 ma (1)	A	

1 Fitzgerald et al. 1990
2 Mendez 1966

CORRELATION OF EVENTS WITH THE GLOBAL CYCLE CHART