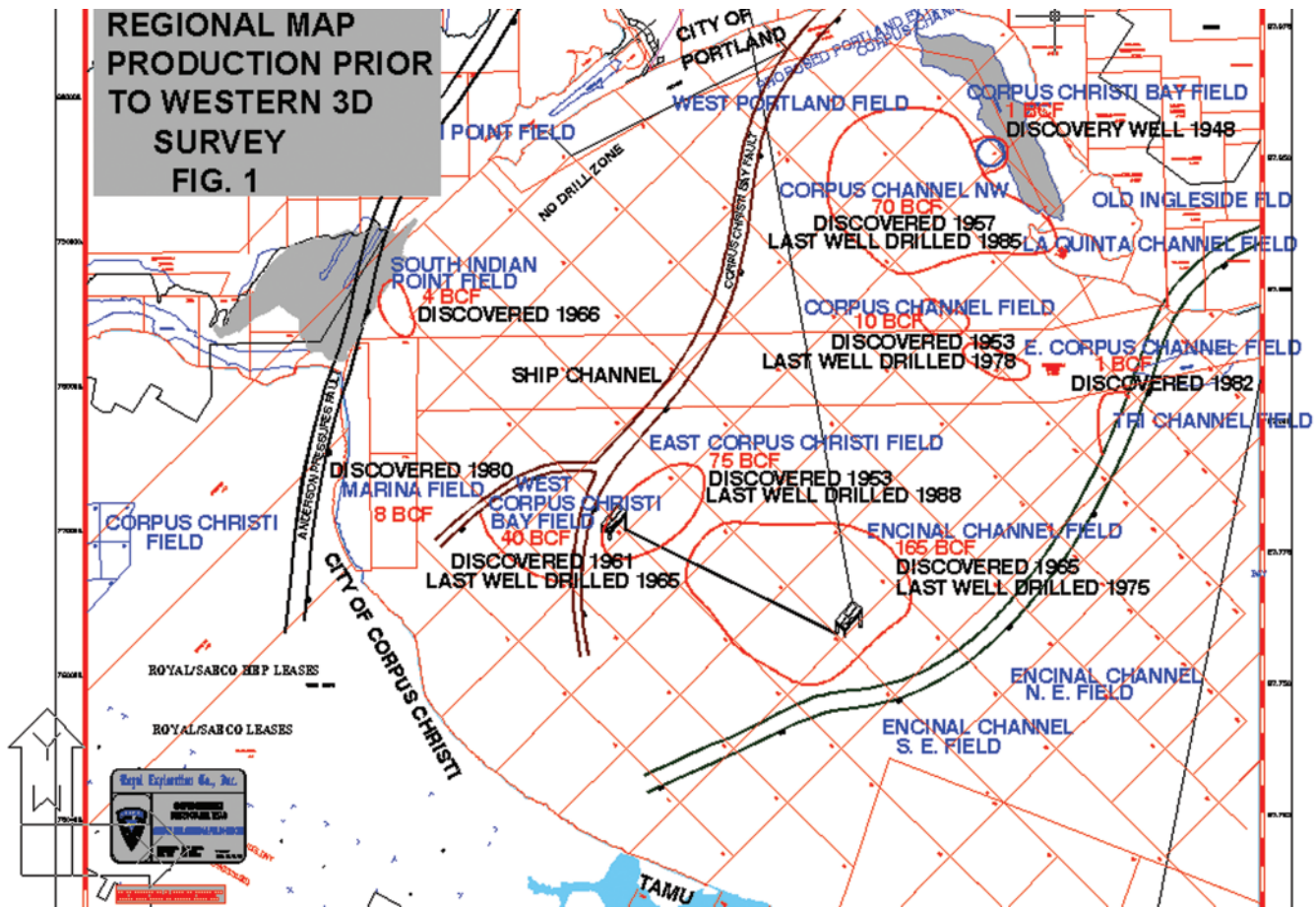


SIPES Luncheon Meeting

Corpus Christi Bay - Another 3-D Success

Robert M. Rice, Principal Geologist, Royal Exploration Co., Inc.



Sabco Oil & Gas Corporation and Royal Oil & Gas Corporation formed a partnership in 1997 to exploit state leases in Corpus Christi Bay that were held for production by Sabco with the remnants of excellent Frio production discovered between 1952 and 1970. The partnership was consummated on the day that 80 square miles of Western Geophysical speculative 3-D seismic survey data in western Corpus Christi Bay were released. The partnership concentrated on two fields, East Corpus Christi and Encinal Channel, which are downthrown to a large growth fault that extends across the mid-section of the bay.

The two fields are located on a shale-cored ridge which is perpendicular to the growth fault. East Corpus Christi Field is closest to the fault. At the time the partnership was formed, it had produced 90 billion cubic feet (BCF) of gas from Upper Frio sands aged from *Marginulina* (approximately 6,000 feet subsea) through Nonion struma (approximately 9,000 feet subsea). The field is non-geopressed and structurally simple. The sands range from 20 to 50 feet thick with thin shale interbeds and, with the exception of the *Marginulina*, the trapping mechanism is thus anticlinal closure. Encinal Channel

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The thicker shales provide the seal for the upthrown fault closures and, when combined with the complex fault pattern, are ideal candidates for 3-D seismic surveys.

Field is southeast of East Corpus Christi Field and becomes the dominant structural feature with depth, starting at approximately 9,000 feet subsea at the base of the Upper Frio *Nonion struma* section and producing down to the Middle Frio *Discorbis "D"* at approximately 12,500 feet subsea. The East Corpus Christi Field has produced in excess of 150 BCF of gas with most of the sands being geopressed and faulting becoming increasingly complex with depth. The sands vary from 20 to 150 feet in gross thickness with the shale intervals being much more abundant and thicker than at East Corpus Christi Field. The thicker shales provide the seal for the upthrown fault closures and, when combined with the complex fault pattern, are ideal candidates for 3-D seismic surveys.

The entire two-field complex was discovered and exploited prior to the advent of high quality 2-D seismic data, leaving a prospect with "major-league" reserves and no modern seismic data. Encinal Channel Field also had a key well, the Gulf #2 State Tract 48, which had produced 2.6 BCF of gas from the Middle Frio M-4 Sand at 10,586 feet subsea prior to watering out. The well had a water contact that, by subsurface control was known to be 300 feet low to the top of the structure. There appeared to be 700 acres of unproduced prospective area between this well and the next highest producing well. The 3-D seismic data interpretation confirmed the existence of several fault blocks in the 700-acre target area. The Sabco/Royal partnership drilled these fault blocks first, followed by fault blocks identified using 3-D seismic data, eventually drilling 17 successful wells and 3 dry holes. This drilling program resulted in peak production of 60 million cubic feet per day of gas and additional cumulative production to date of approximately 100 BCFE. In early 2009, gas production was still 15 million cubic feet per day. Production in Corpus Christi Bay was thus brought back to life and can be added to the long list of 3-D success stories. ■

Biographical Sketch

ROBERT M. RICE has worked for over 30 years as a petroleum geologist. He began his career with Texaco in New Orleans where he worked for four years as an offshore geologist in the Gulf of Mexico. He moved to Corpus Christi, Texas to work the onshore Texas coast for Texas Oil and Gas and later for three family owned companies: Edwin L. Cox, Suemaur Exploration, and Royal Exploration Company. At Royal, he was the principal geologist for the Corpus Christi Bay project. He subsequently returned to offshore work and has been the principal geologist for Royal's Gulf of Mexico exploration program.

Mr. Rice graduated summa cum laude from Denison University with a B.S. degree in geology and earned an M.S. degree in geology from the University of Southern California.

