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Coalbed Methane in Late Pennsylvanian to Early Permian coal, Kerr Basin, Edwards County, Texas

In 2001, the Rendova Loretta -1 well penetrated a coal within the Late Pennsylvanian to Early Permian portion of the Cisco Group of the Kerr Basin. Canister desorption measurements show that this coal contains about 140 standard cubic ft of gas/ton (on an as received basis) and, when flow tested, produced gas at a maximum rate of 210 mcf/day. The coalbed methane in the discovery well has now been confirmed by four offset wells. The reported production in Loretta -1 is from 14 net ft of coal, informally designated as the A seam, that lies within a 25 ft thick coal zone from 2270 to 2295 ft depth. There are two other coal zones that occur locally in the play area: the B coal zone 460 ft above the A coal zone and, the C coal zone, 300 ft above the B coal zone. These coal zones appear to extend at least to the eastern Val Verde Basin.

Palynology of the A coal zone as well as fusulinid studies of related limestones in a nearby well bracket a Late Pennsylvanian to Early Permian (Wolfcampian) age for the A coal zone. Maceral analysis of a composite core sample from the A-coal zone indicate that the coal bed is composed of about 86% vitrinite, 10% inertinite and 4% liptinite with a coal rank of high-volatile B bituminous (mean random vitrinite reflectance of 0.6 to 0.7%) and a moderate to low grade of 37 wt.-% ash yield (dry basis) and 2 wt.-% moisture (as received basis). The floral assemblage along with the regional ash yield of about 30 to 37 wt.-% and a sulfur content of about 5 wt.-% indicate the coal was deposited in a marine influenced lowland mire.

The CBM in the Kerr Basin and Val Verde Basin suggest coalbed methane or gas shale potential may be present in the Pennsylvanian to Permian strata of the tectonically related southwestern Val Verde, Marathon and Marfa foreland basins