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Coal-bed Methane Overview, Southern Raton Basin, New Mexico and Colorado

The Raton Basin, with an estimated 10 TCF coal-bed methane (CBM) resource base, is one of the premier, on-going plays in North America and is currently producing 200+ MMCFG/D from over 1500 wells. In 1999, El Paso Production began development on its 648,000 mineral acres in Vermejo Park Ranch, New Mexico and Colorado, Southern Raton basin. In the process, El Paso has amassed a robust geotechnical database including 47,000 feet of continuous core, 310 Platform Express/ECS/ELAN log suites and hydrochemistry data on 400+ producing wells. In addition, El Paso is in the third and final year of a collaborative DOE-funded field, geological, engineering and laboratory study with Sandia National Laboratories, Albuquerque, NM, focusing on the fracture-related “plumbing” system.

Geotechnical insights into this complex CBM play, employing an integrated, data-driven approach, suggest that the basin has undergone a polytectonic history. The maximum horizontal compressive stress during Laramide deformation, created by overthrust indentation into the basin from the west, was generally east-west as recorded by the majority of surface and subsurface natural fracture strikes. Present-day horizontal compressive stress measured by stress-anisotropy logs trends north-south, suggesting a relationship to Rio Grande extension and affecting the design of reservoir stimulations and the placement of wells. Local anomalous structural domains occur within this overall pattern creating structural enhancement of production with reservoirs containing discreet gas content, water chemistry, bottom hole pressure gradients and production profiles. Regional and local gas saturation variation also occurs in both lateral and vertical dimensions with geostatistical studies showing greater similarity in production characteristics in the east-west direction

than in the north-south direction. Coked coals, igneous sills and gas-charged, tight sands may also serve as reservoirs, contributing to total non-CBM gas-in-place considerations. ■

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Biographical Sketch

PAUL M. BASINSKI is a consulting geologist in the Coalbed Methane Division, El Paso Production Company, Houston, where he directs both unconventional gas new ventures and geotechnical activities on the company’s 648,000 acre Southern Raton Basin Vermejo Park Ranch CBM project in NM and CO.

Paul began his career with Chevron USA, Denver, in 1979 where he worked the northern Rockies as an exploration geologist. After a western U.S. exploration position with Tesoro Petroleum, Denver, Paul joined Grace Petroleum, Denver and then Oklahoma City, where he discovered 14 fields in the Rockies, Michigan Basin, Gulf Coast and Permian Basin as a district geologist. With the sale of Grace to Samson and Sonat in 1993, Paul moved on to work unconventional gas in the San Juan Basin for Burlington Resources, Farmington, New Mexico, as a geological advisor. Paul was involved in the overpressured and underpressured Fruitland Coal plays as well as tight sands. Paul and his teammates completed a basin-wide Cretaceous Dakota sand analysis that opened up a virgin exploration fairway exceeding 700 square miles with three discoveries. In 1998, Paul joined Burlington’s new International Division, Houston, where



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he conceived and implemented the first corporate-sanctioned West Africa regional exploration play and helped secure participation in a six well commitment on 5.4 million acres in deepwater Gabon.

Paul received a BS in geology from the State University of New York, Buffalo, in 1975 and an MS in geology from Mackay School of Mines, University of Nevada, Reno, in 1978. He is a licensed geologist in Wyoming, Texas and Utah and an AAPG Certified

Petroleum Geologist. Paul is also a member of RMAG, WGA, CSPG, SEG, SPWLA and SPE. Paul has published numerous papers on subjects including unconventional uranium deposits, fractured carbonates, tight sand neural network “sweet spot” prediction and integrated unconventional gas studies with recent focus on collaborative natural fracture analyses in the Raton Basin with Sandia National Laboratories, Albuquerque, New Mexico.